SONY

3-769-796-13 (1)

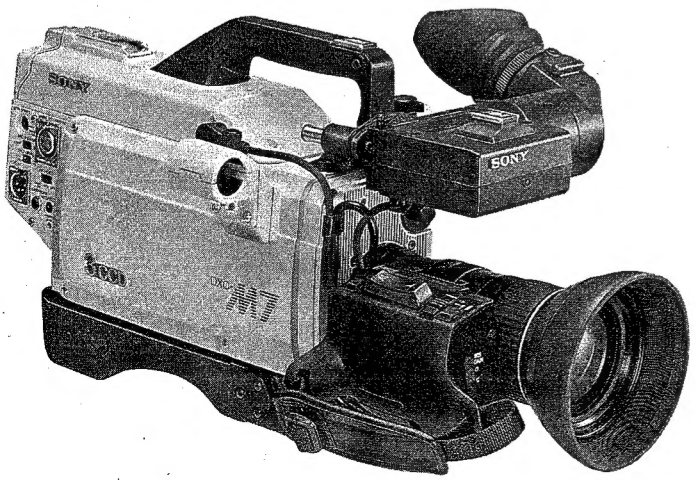
Color Video Camera

DXC-M7/M7P
DXC-M7K/M7PK
DXC-M7H/M7PH

Operating Instructions

Before operating the unit, please read this manual thoroughly and retain it for future reference.

3CCD



Owner's Record

The model and serial numbers are located on the rear side. Record the model and serial numbers in the spaces provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. _____ Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the units to rain or moisture.

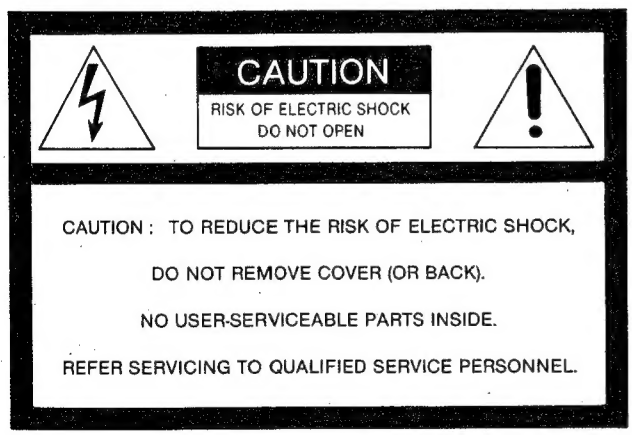
To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Warning — This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC Rules.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

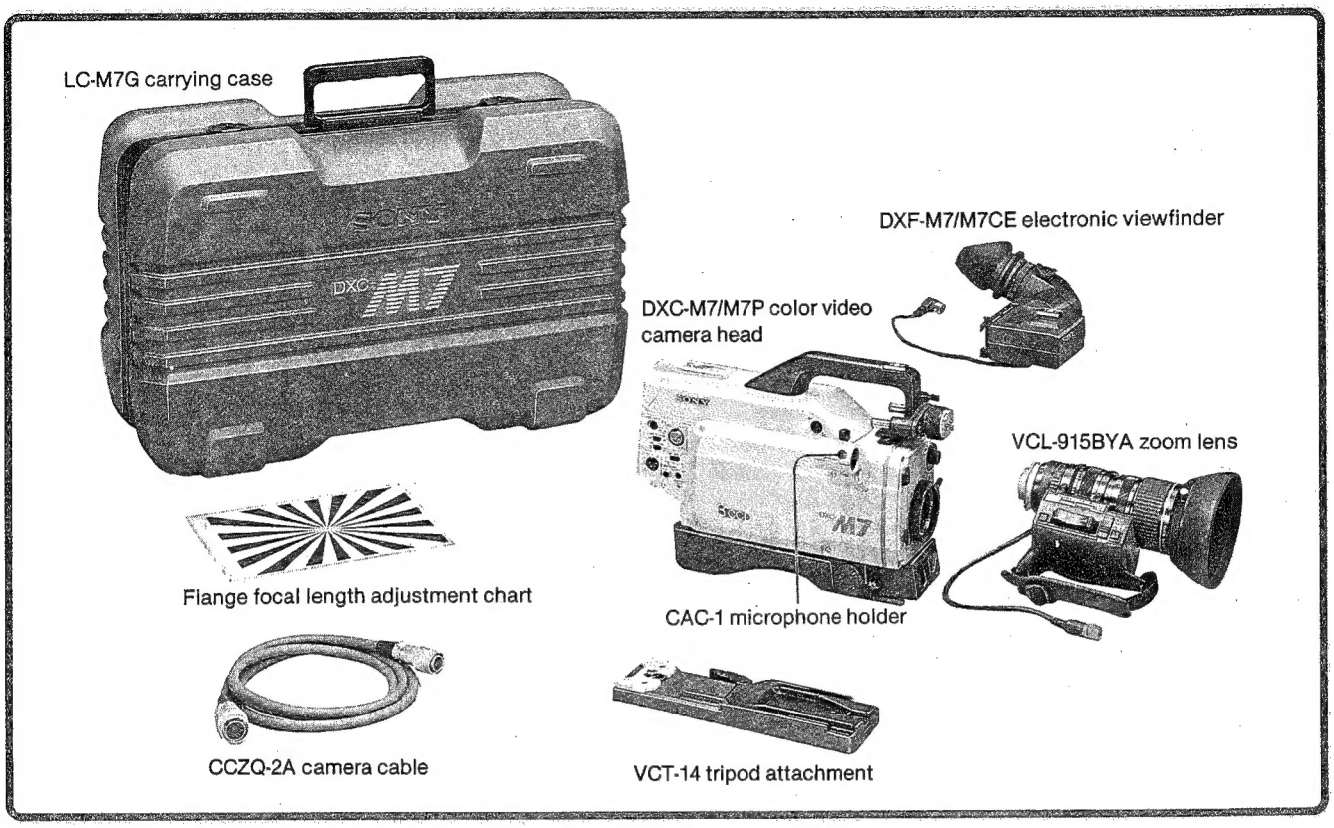
This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Table of Contents

Composition

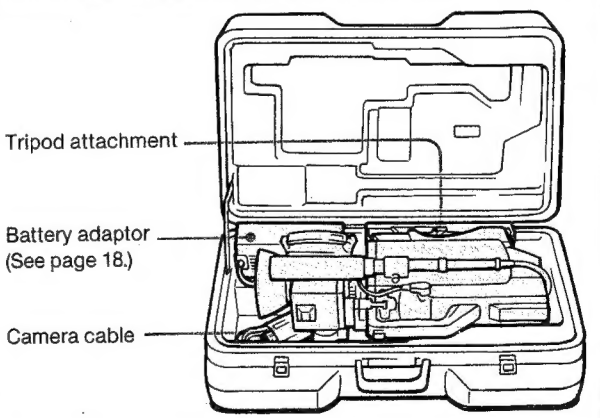
The DXC-M7/M7P, the DXC-M7K/M7PK and the DXC-M7H/M7PH comprise slightly different components, as noted below. However, the operating procedure for the camera itself is the same.

If you use a zoom lens other than the VCL-915BYA zoom lens, refer to the lens' instruction manual for information about its operation.



Model / Composition	DXC-M7 /M7P	DXC-M7K /M7PK	DXC-M7H /M7PH
DXC-M7/M7P color video camera head	Yes	Yes	Yes
VCL-915BYA zoom lens	No	Yes	No
DXF-M7/M7CE electronic viewfinder	Yes	Yes	No
LC-M7G carrying case	Yes	Yes	No
CCZQ-2A camera cable	Yes	Yes	No
VCT-14 tripod attachment	Yes	Yes	No
CAC-1 microphone holder	Yes	Yes	No
Flange focal length adjustment chart	Yes	Yes	Yes

Packing



Note

This instruciton manual is for both the DXC-M7 series (DXC-M7/M7K/M7H) and the DXC-M7P series (DXC-M7P/M7PK/M7PH) color video cameras. These two types of cameras are designed for different signal systems, the NTSC and the PAL systems. So each type of camera must be used with the equipment which matches its signal system, but the operating procedures for both series are the same. The DXC-M7 series is for the NTSC color system, and the DXC-M7P series is for the PAL system.
In this manual, usually, the DXC-M7P series camera and its connected equipment are referred to the PAL model by a suffix "P", "PS", or "CE" in their names. The DXC-M7 series camera and its equipment are referred to the NTSC model without suffixes. If a model cannot be distinguished by its name, this manual specify whether it is an NTSC or PAL model.

Outline

Features

The DXC-M7/M7P is a portable color video camera which uses a newly developed 3-chip CCD (Charge Coupled Device) solid state image sensor which has 380,000 (DXC-M7)/460,000 (DXC-M7P) effective picture elements.
Thanks to small-size and light-weight, the camera can be used for program production, news gathering, etc. for easy handling and portability when used with a portable videocassette recorder.

Adoption of CCD

- Incorporation of a 3-chip CCD results in a compact, light-weight camera body which consumes less power than does a camera using pickup tube(s).
- Low lag, high resistance to image burning and no deflection distortion.
- The CCD is not affected by vibration and mechanical shock.
- The CCD imager is not influenced by terrestrial magnetism.
- Thanks to the high signal-to-noise ratio, the video gain can be increased by 9 dB or 18 dB, which makes it possible to shoot a picture under low light conditions.
- The electric shutter enables the DXC-M7/M7P to produce clear images in still or slow-motion playback even when the objects are moving at very high speeds.

Power sources

- An NP-1A battery pack (optional) can be installed into the DXC-M7/M7P. The camera and 1.5-inch viewfinder can be used for about 70 minutes with a fully charged NP-1A.
- When a DC-8 battery adaptor (optional) is attached and two NP-1As are installed in it, the camera can be used continually for about 140 minutes.
- The power can be supplied to the camera from a portable VTR or from the CCU-M7/M7P, CCU-M3/M3P camera control unit.
- A CMA-8/8CE camera adaptor (optional) is needed if the camera is to be used with the AC power source.

Various connection capability

- The camera can be connected to a U-matic VTR or "Betacam" VTR.
- The camera can be used as a studio camera when connected to the CCU-M7/M7P, CCU-M3/M3P camera control unit.
- The camera can be connected to an S-VHS format videocassette recorder.

Automatic adjustment and memory functions

- The white balance and black balance are automatically adjusted by a built-in microprocessor. The adjusted values are retained for a long period of time while the camera's power is off.
- The black set is automatically adjusted, together with the black balance.

Display and related function

- Character display function
  The built-in character generator displays the operational status of the camera and the warning indications on the viewfinder.
- Warning function
  The REC indicator on the viewfinder blinks if the connected VTR malfunctions.
- Zebra pattern display
  Zebra pattern appears on the viewfinder screen where the video level is about 70 IRE. This pattern provides a useful reference when the operator manually adjusts the iris.

Easy to operate the viewfinder

- The diopter can be adjusted to accommodate the operator's visuality.
- The viewfinder can be moved forward and backward.

Other features

- Four kinds of optical filters are built-in.
- Color bar signal can be output.
- Thanks to the Dynamic Contrast Control (DCC) circuit, a wide dynamic range which will allow light with an intensity level up to six times greater than that of normal light can be obtained.
- Magnesium die-cast body makes the camera solid and light-weight.

Precautions

Safety
- Operate the camera only on 12 V DC. For operation from an ac power line, use the camera adaptor recommended for this camera. Do not use any other camera adaptor.
- Allow adequate air circulation to prevent internal heat build-up.

Operation
- Do not operate the camera outside a −10°C to +45°C (14°F to 113°F) temperature range.
- Keep the camera away from very strong magnetic fields to avoid distortion and flutter on the screen.
- Do not hold the camera by the viewfinder.

Operation of the viewfinder
Do not point the viewfinder directly at the sun, or the plastic inside the viewfinder may be damaged.

Cleaning
Clean the cabinet, panel and controls with a dry soft cloth, or soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

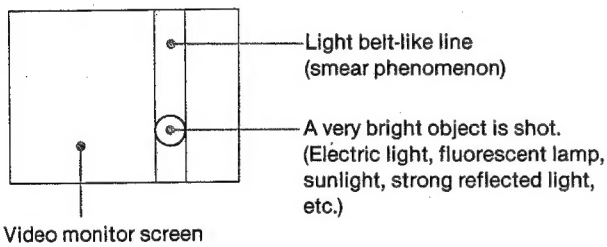
Repacking
Do not discard the carton. It affords maximum protection whenever the camera is transported. Do not transport or ship the camera only in the carrying case. Repack it as it was originally packed at the factory.

If you have any questions about this camera, contact your authorized Sony dealer.

Special Characteristics of a CCD

The following phenomena may appear on the monitor screen while the DXC-M7/M7P series video camera is used. These phenomena are not indicative of a camera malfunction.

Smear phenomenon
This may appear when a very bright object is shot.

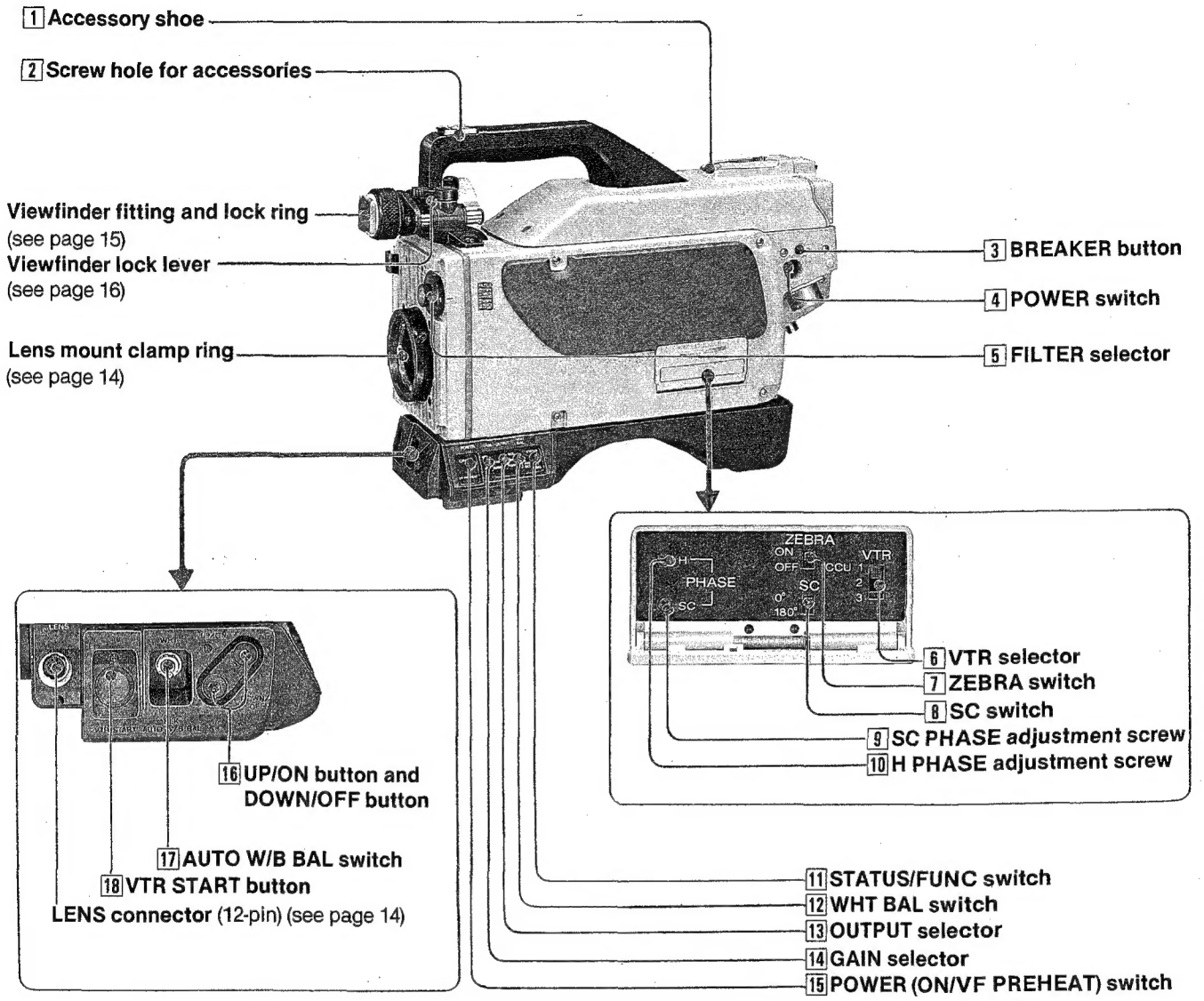


White dots
White dots may appear on the screen when the camera is operated at high temperature.

Wavy picture
This may appear when fine stripes, straight lines, etc., are shot. Their images monitored on the screen look wavy.

Location and Function of Controls

DXC-M7/M7P Color Video Camera Head



1 Accessory shoe
Used to attach a DXF-40/40CE (4-inch) or DXF-50/50CE (5-inch) viewfinder (optional). For details, refer to the instruction manual furnished with the viewfinder.

2 Screw hole for accessories
U1/4"-20UNC. Use a screw with the length of max. 6 mm.

3 BREAKER button
When an excessive current flows from a power source, breaker is activated, and the power is automatically cut off. After removing the cause of an excessive current, press this button. The power will be restored.

4 POWER switch
Used to turn the power of the camera on and off.

5 FILTER selector (see page 33)
Used to select an appropriate filter according to the light sources illuminating the object.

[6] VTR selector
Set to the appropriate position, according to the equipment (VTR, CCU) to be used.
For details, see pages 20 to 23 and 43, 44.
1/CCU: For a VTR such as the Sony U-matic, 1-inch or "Betacam" format VTR, or a CCU-M7/M7P or CCU-M3/M3P camera control unit.
2: For a VHS format VTR such as a Panasonic NV-100.
3: For an S-VHS format VTR such as a Panasonic AG-7400.

[7] ZEBRA switch (see page 32)
ON: A zebra pattern appears as a reference on the part of the viewfinder screen where the video level of the object is about 70 IRE. Use the pattern as reference to adjust the iris manually.
OFF: A zebra pattern does not appear.

[8] SC (subcarrier) switch (see page 46)
Used to select the SC phase difference, 0° or 180°, between the gen-lock input and video output signals when two or more cameras are used simultaneously. This roughly adjusts the difference.

[9] SC PHASE (subcarrier phase) adjustment screw (see page 46)
Used for fine adjustment of the SC phase difference between the gen-lock input and video output signals when two or more cameras are used simultaneously after roughly adjusting it with the SC switch [8].

[10] H PHASE (horizontal phase) adjustment screw (see page 46)
Used to adjust the horizontal phase difference between the gen-lock input and video output signals when two or more cameras are used simultaneously.

[11] STATUS/FUNC switch (see pages 40 to 42)
Used to change the characters displayed on a viewfinder.

[12] WHT BAL (white balance memory select) switch
A or B: When white balance is automatically adjusted using the AUTO W/B BAL switch [17] with this switch set to this position, the adjusted value is stored in the A or B memory. After adjustment, the stored white balance value can be used for shooting at any time.
RESET: The factory-preset white balance value (3200K for iodine lamps) will automatically be used, provided that the FILTER selector [5] is set to the 1 position. You can start shooting immediately.

[13] OUTPUT selector
Used to select the video output signal from the VIDEO OUT and 26-pin connectors. The signal sent to a viewfinder screen is also selected.
CAM: The signal picked up by the video camera will be output. The Dynamic Contrast Control (DCC) circuit (see page 41) can be turned on and off.
BARS: The color bar signal will be output. Use the signal for adjusting the video monitor. The DCC circuit does not operate.

[14] GAIN selector (see page 33)
Used to select the gain of the video amplifier according to the brightness of the object.
0 (dB): Normally set to the 0 position.
9 (dB): The gain will be increased by 9 dB
18 (dB): The gain will be increased by 18 dB

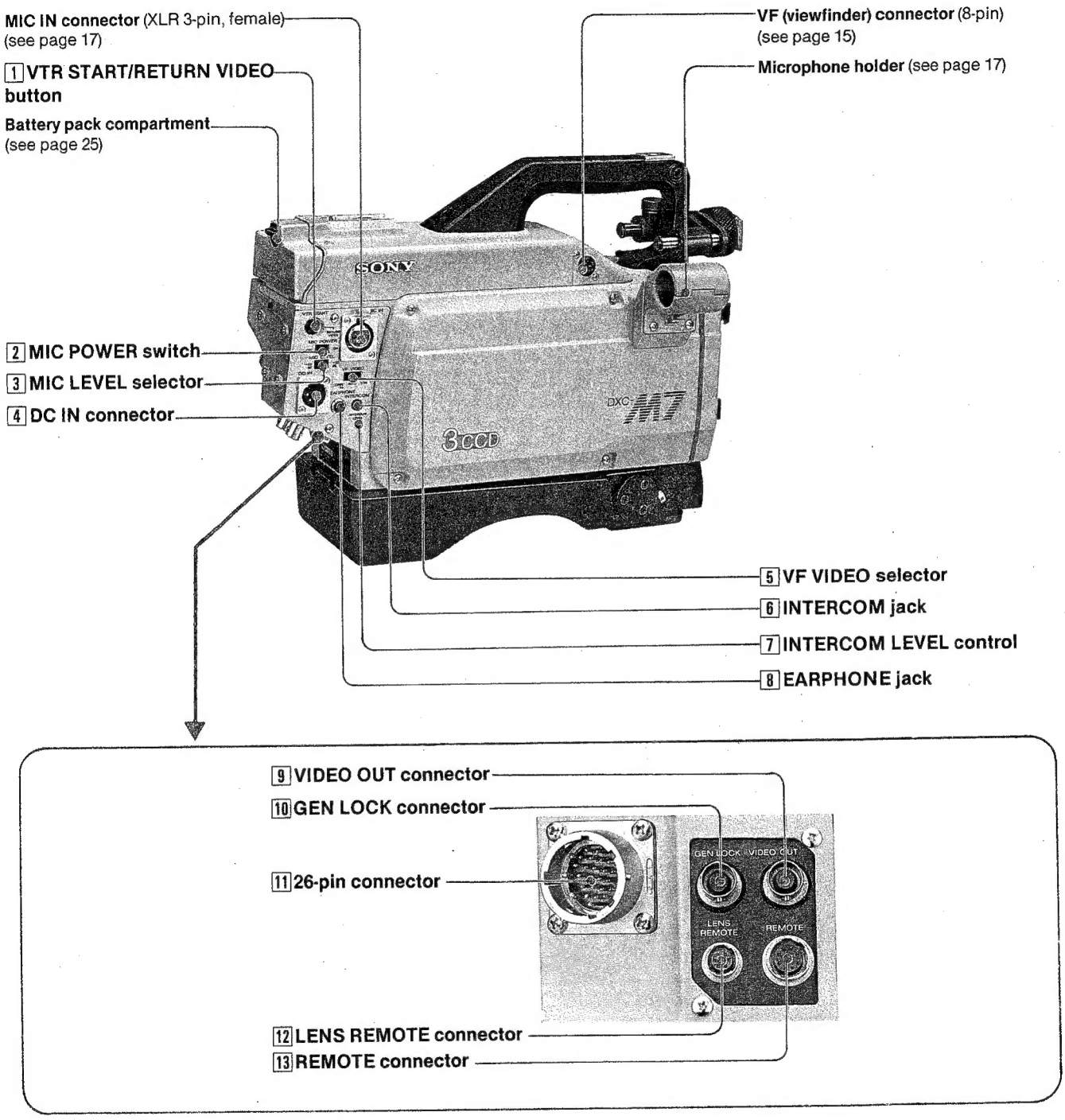
[15] POWER (ON/VF PREHEAT) switch
After the POWER switch [4] is set to the ON position, set this switch as follows:
ON: The power of the camera is turned on.
VF PREHEAT: The power is supplied only to the viewfinder. In the standby mode, set the switch to the VF PREHEAT position, and to start shooting, set to the ON position. Then the power is saved in the standby mode.

[16] UP/ON button and DOWN/OFF button
Used to set the following items together with the STATUS/FUNC switch [11].
- On/off of low light indication
- On/off of inadequate color temperature conversion filter indication
- Reference level for automatic iris adjustment
- Master pedestal level
- Knee point
- Shutter speed

[17] AUTO W/B BAL (automatic white balance/black balance adjustment) switch
WHT: For automatic white balance adjustment, push this switch to the WHT position.
The WHT BAL switch should be set to the A or B position.
BLK: For automatic black set and black balance adjustment, push this switch to the BLK position.
When click sound is heard by pushing this switch to the WHT or BLK position, release the switch.

[18] VTR START button
Used to start and stop recording when a portable VTR is connected to the 26-pin connector. Pressing this button starts recording, and pressing again stops recording. (The VTR button on the lens has the same function.)

DXC-M7/M7P Color Video Camera Head



[1] **VTR START/RETURN VIDEO button**
When a portable VTR is connected to the 26-pin connector:
Used to start and stop recording. Pressing this button starts recording, and pressing again stops recording. (The VTR button on the lens has the same function.)
When a CCU-M7/M7P or CCU-M3/M3P is connected to the 26-pin connector:
The return video picture can be monitored on the viewfinder screen while the button is kept depressed. When the button is released, the camera picture can be monitored.

[2] **MIC POWER switch**
ON: When a microphone of a phantom powering system is used, set the switch to this position. The power is supplied to the microphone from the MIC IN connector.
OFF: When a microphone other than a phantom powering system is used, be sure to set the switch to the OFF position.

[3] **MIC LEVEL (microphone output level) selector (see pages 20 to 23)**
Used to select the output level of the signal picked up by the connected microphone. Set the switch to the –20 dB or –60 dB position according to the microphone input level of a VTR or CCU to be used.

[4] **DC IN connector** (XLR 4-pin, male)
Used to connect the plug of the DC-8 battery adaptor to supply power to the camera from the battery packs.

[5] **VF VIDEO (viewfinder video) selector**
Used to select the picture displayed on a viewfinder screen.
CAMERA: A camera picture is displayed during recording and playback.
AUTO: During recording, a camera picture is displayed, and during playback, a playback picture is displayed. On some VTRs, displayed picture cannot be changed automatically. For details, refer to the table on page 22.
VTR: A picture from the VTR is displayed during recording and playback. On some VTRs, a picture is not sent from the VTR during recording, and nothing is displayed on a viewfinder screen. For details, refer to the table on page 22.

[6] **INTERCOM jack** (mini intercom jack)
Used to connect a DR-100 intercom headset (optional). It will be possible to communicate between the camera and the connected camera control unit or a video switcher.

[7] **INTERCOM LEVEL control**
Used to control the audio output signal level from the INTERCOM jack [6].

[8] **EARPHONE jack** (minijack)
Used to connect an earphone for monitoring the recording or playback sound from the VTR.

[9] **VIDEO OUT connector** (BNC type)
Used to connect a video input connector on a VTR or a video monitor.

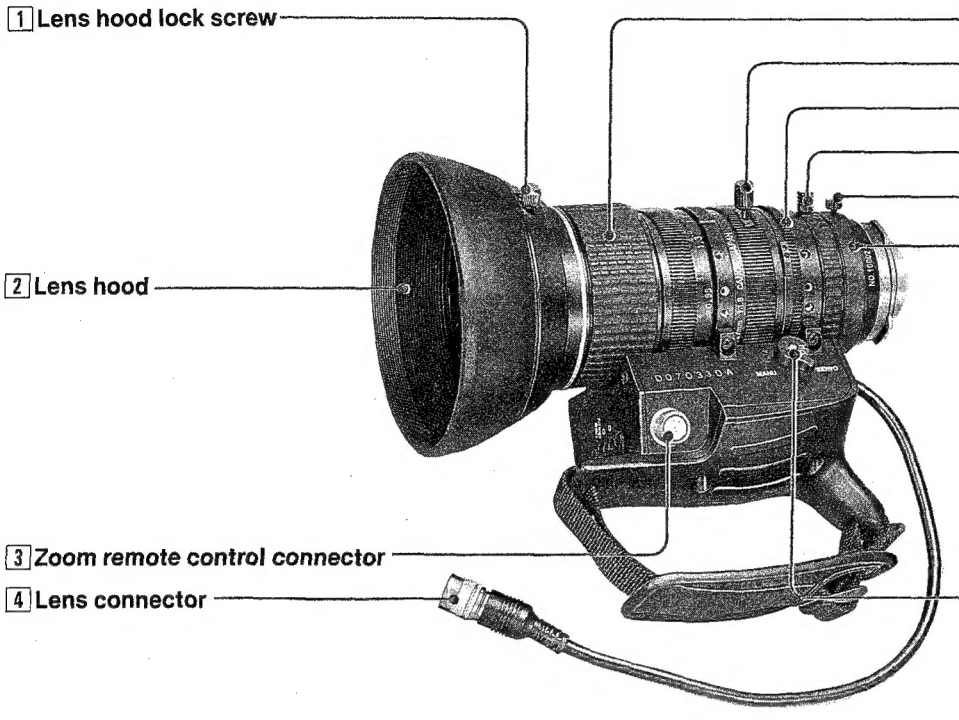
[10] **GEN LOCK connector** (BNC type)
Used to connect the gen-lock input signal (composite video signal or black burst signal) for operating the camera in an external sync mode.

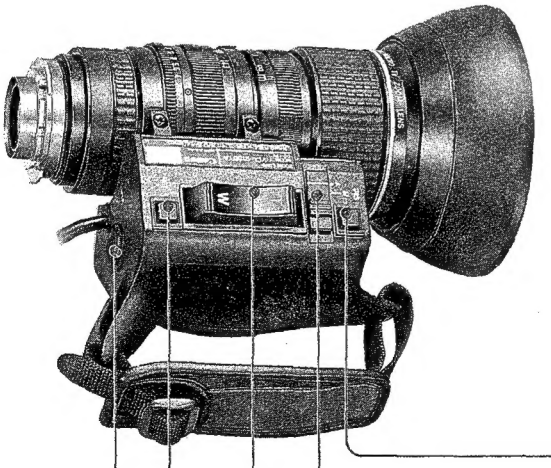
[11] **26-pin connector**
Used to connect all signals of the video camera such as video, audio, control signals, and also the power. Connect a VTR, CCU-M7/M7P or CCU-M3/M3P camera control unit, or CMA-8/8CE camera adaptor here.

[12] **LENS REMOTE connector** (6-pin)
Used to connect a lens remote control unit (available in the near future).

[13] **REMOTE connector** (10-pin)
Used to connect a remote control unit.

VCL-915BYA Zoom Lens





[1] **Lens hood lock screw**

[2] **Lens hood**

[3] **Zoom remote control connector** (8-pin)
Used to connect an LO-26 zoom remote control unit to remotely control a zoom function.
At the factory, a cap is attached here.

[4] **Lens connector** (12-pin)

[5] **Focus ring**
Used to adjust focus. Turn the ring so that a clear picture is obtained.

[6] **Manual zoom lever**
Used for manual zooming. Turn this lever with the ZOOM selector [11] set to the MANU position.

[7] **Iris ring**
Used for manual iris adjustment. Turn this ring with the IRIS selector [13] set to the M position.

[8] **MACRO ring and lever**
Used for close-ups. Pull the lever, and turn the ring to the direction indicated by the arrow.

[9] **Ff adjustment ring lock screw**
Used to lock the Ff adjustment ring [10] at the adjusted position.

[10] **Ff (flange focal length) adjustment ring**
Used to adjust the flange focal length.

[11] **ZOOM selector**
SERVO: For motorized zooming.
MANU: For manual zooming.

[12] **Instant automatic iris adjustment button**
Used to adjust iris automatically when the IRIS selector is set to the M position. While the button is pressed, the iris is automatically adjusted, and when released, the iris is adjusted manually.

[13] **IRIS selector**
A (automatic): For automatic iris adjustment.
M (manual): For manual iris adjustment.

[14] ***Motorized zoom switch***
Used for motorized zooming with the ZOOM selector [11] set to the SERVO position. Press the W side for a wide-angle picture, and the T side for a telephoto picture. Zooming is faster when the switch is pressed down all the way and slower when the switch is pressed down only slightly.

[15] **RET (return video) button**
Used to see a following picture on a viewfinder screen:
When a VTR is connected:
By pressing this button, a return video signal from a VTR (a picture in E-E mode, see page 22) can be seen.
When a CCU-M7/M7P or CCU-M3/M3P is connected:
By pressing this button, a return video signal from a switcher or a special effects generator can be seen.

[16] **VTR button**
Used to start or stop recording when the DXC-M7/M7P is connected to a VTR. Pressing this button starts recording, and pressing it again stops recording.
This button has the same function as the VTR START button of the camera head.

DXF-M7/M7CE Viewfinder

[1] **REC/TALLY indicator (red)**
When recording using one camera, this indicator illuminates during recording.
When two or more cameras are operated using CCU-M7/M7Ps or CCU-M3/M3Ps, this indicator illuminates when the camera's picture is selected by a switcher, etc.
When a connected VTR is equipped with a warning system, the indicator blinks in accordance with the warning system of the VTR.

[2] **BATT indicator (red)**
When the battery of the camera or VTR is discharged and the voltage becomes below the specified level, the indicator starts blinking.
When the camera continues to be operated after the indicator starts blinking, the indicator will lit, and then go out.

[3] **GAIN UP indicator (orange)**
When the GAIN selector on the camera is set to the 0 (dB) position, the indicator is extinguished.
When the GAIN selector on the camera is set to the 9 (dB) or 18 (dB) position, the indicator lights up.

[4] **Eye cup**
It is possible to see the screen with this part opened up.

[5] **Accessory receptacle**
U1/4"-20UN. Screw length of max. 6 mm is acceptable.

[6] **TALLY switch**
ON: The tally lamp [9] is activated.
OFF: The tally lamp [9] is deactivated.

[7] **CONTR (contrast) control**
Used to adjust the contrast of the picture on the viewfinder screen.
This control does not affect the output signal of the camera.

[8] **BRIGHT (brightness) control**
Used to adjust the brightness of the picture on the viewfinder screen.
This control does not affect the output signal of the camera.

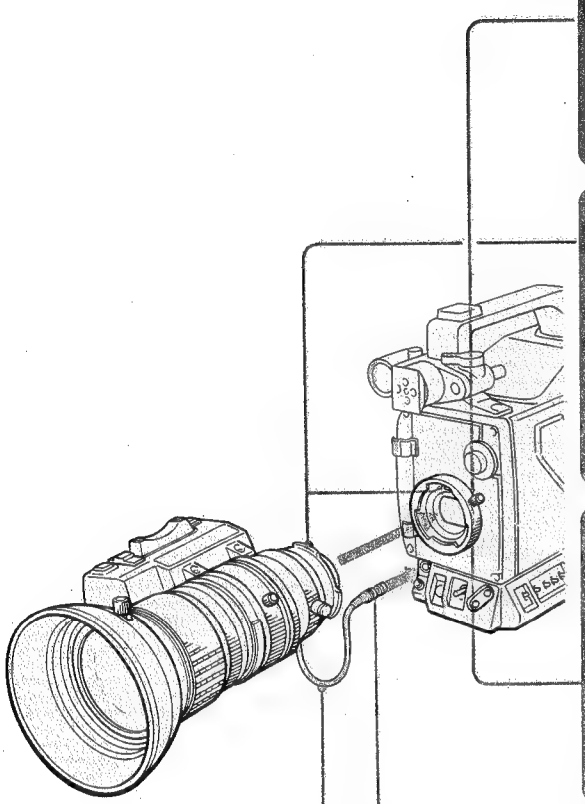
[9] **Tally lamp (red)**
This lamp illuminates or blinks as same as the REC/TALLY indicator [1].

[10] **Diopter adjustment ring** (see page 28)

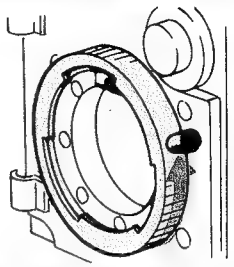
• On some VTRs, the REC/TALLY and BATT indicators do not illuminate nor blink. For details, refer to page 22.

Attaching Accessories

Attaching a Lens

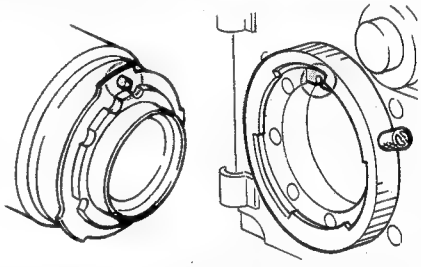


1 Turn the mount clamp ring fully counterclockwise.

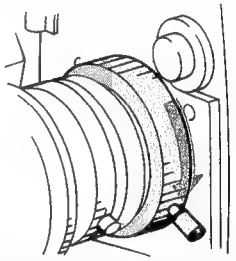


2 Align and insert the lens into the lens mount.

(If caps are attached to the mount sections of the lens and camera, remove them.)

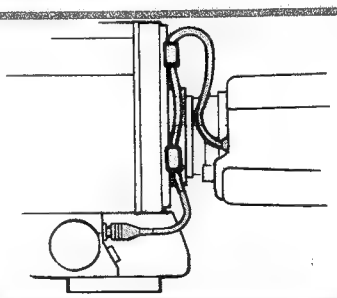


3 Tighten the ring.



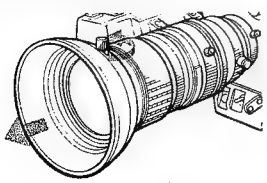
4 Connect the lens connector to the LENS connector of the camera.

5 Clamp the cord.

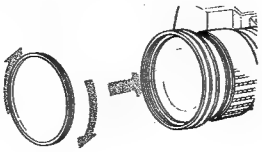


Attaching an optional filter to the lens

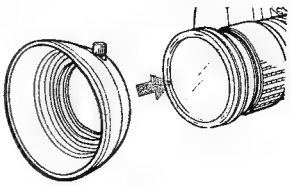
1 Loosen the lens hood lock screw, and detach the lens hood.



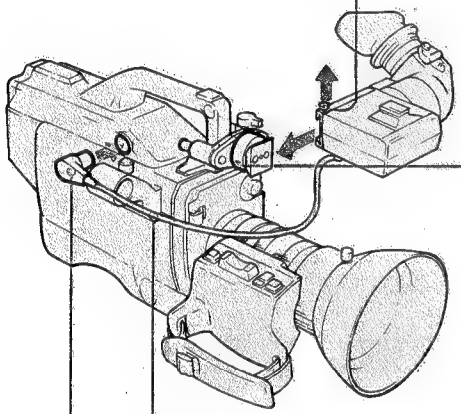
2 Screw the filter into the screw thread of the lens.



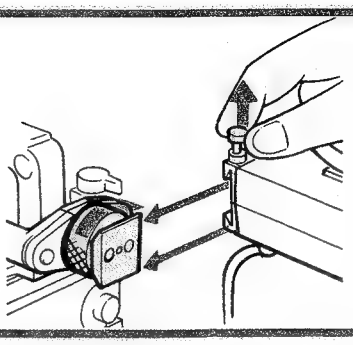
3 Replace the lens hood, and tighten the lens hood lock screw.



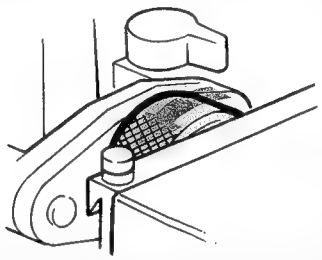
Attaching a Viewfinder



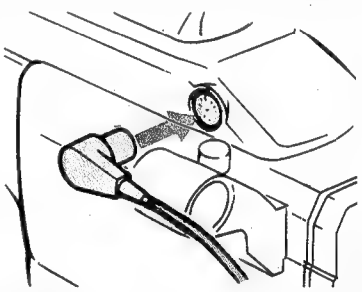
1 Loosen the lock ring, and align and slide the viewfinder into the mount while pulling the pin up.



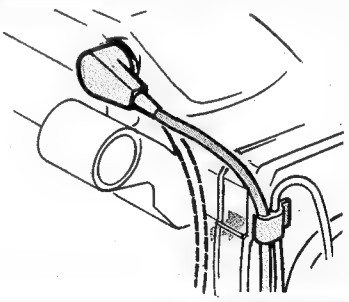
2 Tighten the lock ring.



3 Insert the connector to the VF connector of the camera.



4 Clamp the cord.

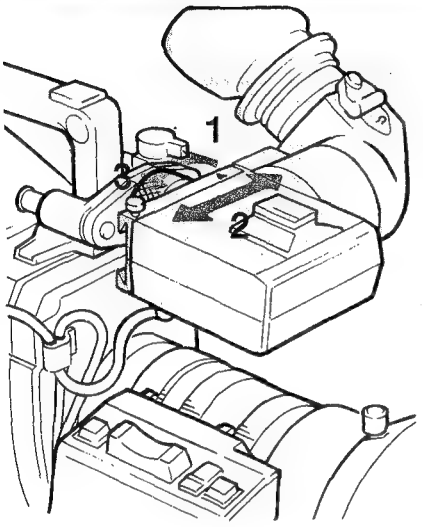


To detach the viewfinder

Loosen the lock ring, and slide the viewfinder while pulling the pin up.

Adjusting the Viewfinder Position

Adjusting left and right position

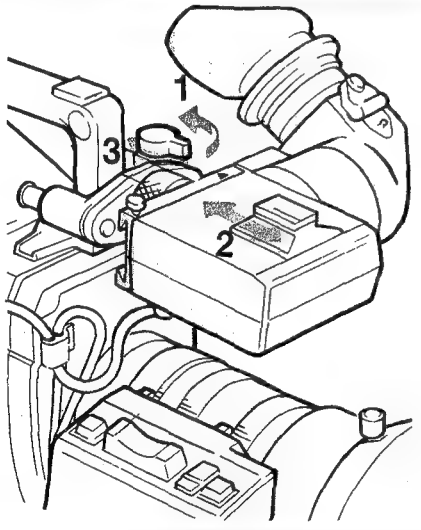


1 Loosen the lock ring.

2 Slide the viewfinder left or right to place it to the desired position.

3 Tighten the lock ring.

Adjusting back and forth position



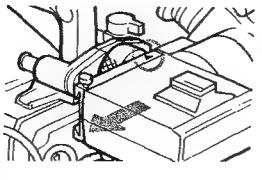
1 Loosen the lock lever.

2 Slide the viewfinder back or forth to place it to the desired position.

3 Tighten the lock lever.

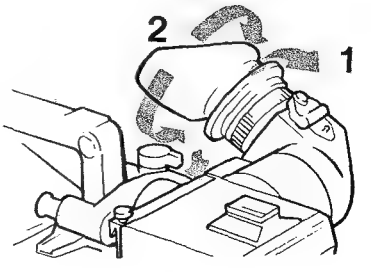
To insert the camera into the carrying case with the viewfinder attached

Slide the viewfinder to the "▶" mark, and tighten the lock ring.



Adjusting the eye cup

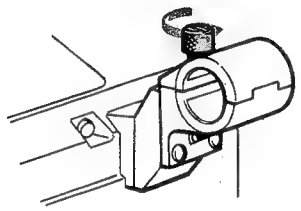
1 Move the eye cup up or down for comfortable use.
2 Rotate the eye cup to fit the eye used for viewing.



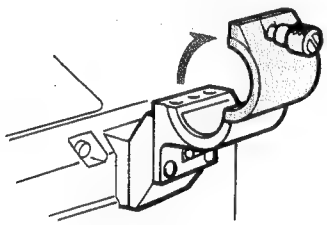
Attaching a Microphone

An optional Sony ECM-672, C-74 microphone or a thinner microphone can be attached to the camera.

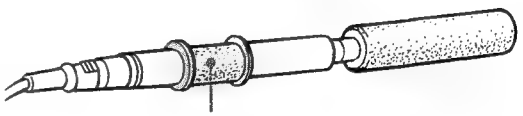
1 Loosen the screw of the microphone holder.



2 Open the microphone holder.

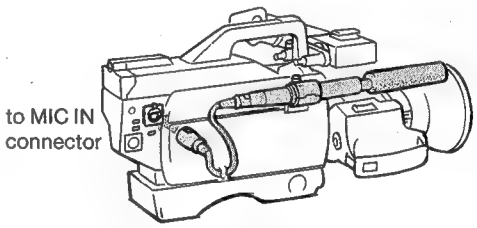


3 Attach a microphone adaptor to the microphone when a thin microphone is used.



When the ECM-672 or C-74 is used, the microphone adaptor is not necessary.

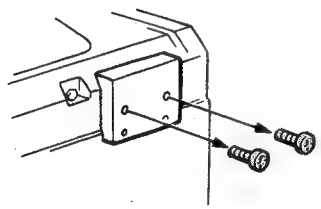
4 Insert the microphone to the microphone holder, and tighten the screw.



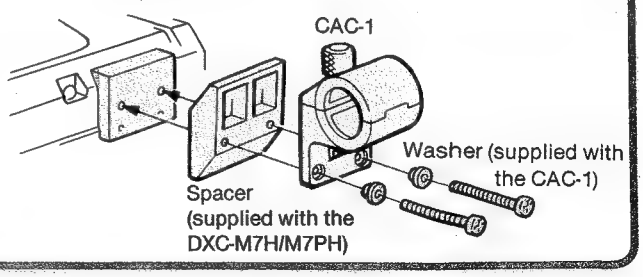
For the customers of the DXC-M7H/M7PH

The microphone holder is not supplied with the DXC-M7H/M7PH.
Attach an optional CAC-1 camera microphone holder as shown below.

1 Remove blind screws.



2 Attach the CAC-1 and the spacers using the screws supplied with the DXC-M7H/M7PH.



Setting the MIC POWER switch

When a mircophone of a phantom powering system such as Sony ECM-672, C-74, is used, set the MIC POWER switch to the ON position.
The power is supplied to the microphone from the camera. No independent power source is required to the microphone.
When a microphone other than a phantom powering system is used, be sure to set the MIC POWER switch to the OFF position.

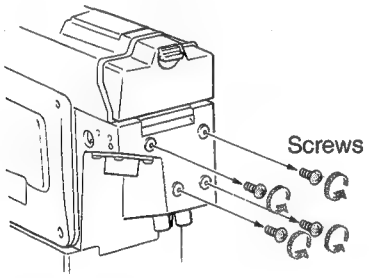
Connecting an earphone

Connect an optional earphone to the EARPHONE connector. The sound picked up by the microphone can be monitored.

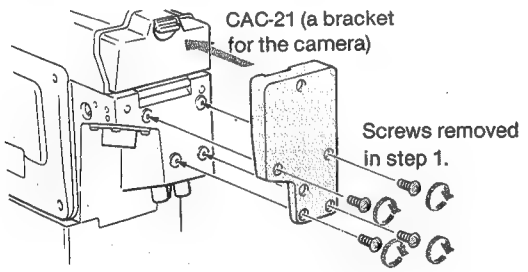
Attaching a Battery Adaptor

When you wish to use the camera for an extended period of time, attach a DC-8 battery adaptor (optional) to the camera by using a CAC-21 battery shoe (optional). In the DC-8, two NP-1A battery packs can be installed.
—Before attaching the DC-8, be sure to remove the NP-1A inserted into the battery compartment.

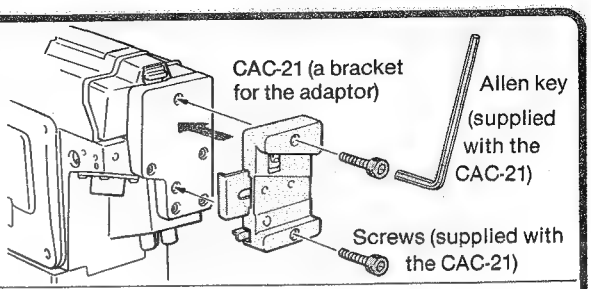
1



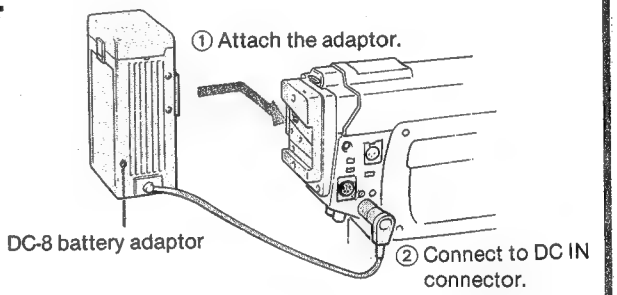
2



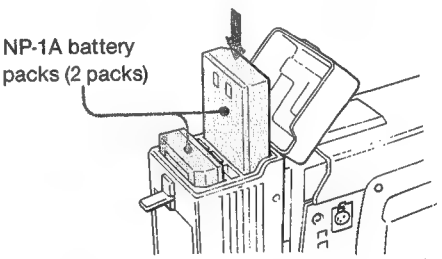
3



4

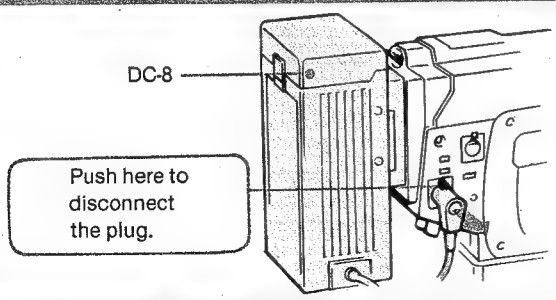


5

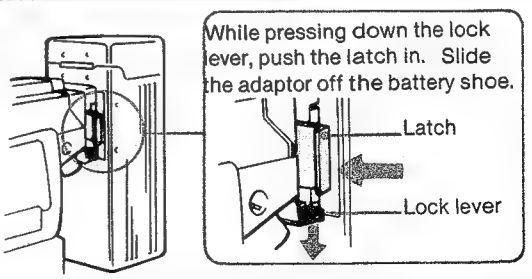


Removing the battery adaptor

1



2



Note on the NP-1A installed into the DC-8

When the DC-8 is attached, the camera can be operated with one or two NP-1A battery packs installed into the DC-8.
When two NP-1As are used, be sure to fully charge both of them.

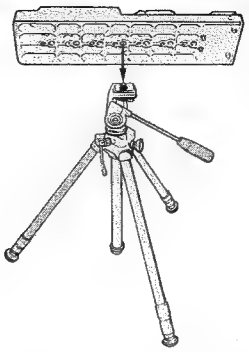
Do not use the charged and not-charged battery packs simultaneously.

Attaching to a Tripod

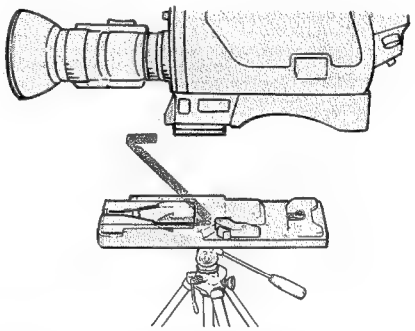
Attach the camera to the tripod using the VCT-14 tripod attachment

1 Attach the tripod attachment to the tripod.
Attach the tripod to the position to be balanced.
Note that there are two sizes of screw holes in the tripod attachment. Be sure to use the hole which fits the screw of the tripod platform you are using.

The camera can be attached to the tripod directly using the screw hole on the bottom of the camera.

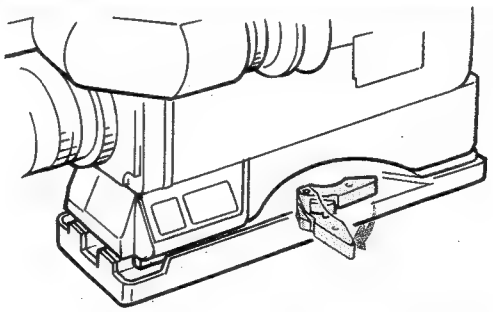


2 Attach the camera to the tripod attachment.
Slide the camera forward along the groove of the attachment until it clicks.



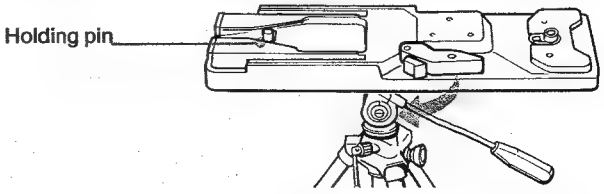
Detaching the video camera

While pressing the red button, move the lever to the direction indicated by the arrow, and detach the video camera.



Note

When the video camera has been detached, the holding pin may still protrude from the center of the groove. If this happens, the video camera cannot be reattached to the tripod attachment. In order to move the holding pin back to its correct position, move the lever in the direction indicated by the arrow while pressing the red button.



Connecting the Video Camera to a VTR

According to the VTR to be connected, operating conditions such as the setting of the VTR selector, power supply, functions to be used, are different.

Connecting to a Portable VTR

VTRs to be connected:

Sony BVU-150/150P, VO-6800/6800PS, VO-8800/8800P, BVW-35/35P

Panasonic NV-100, AG-6400

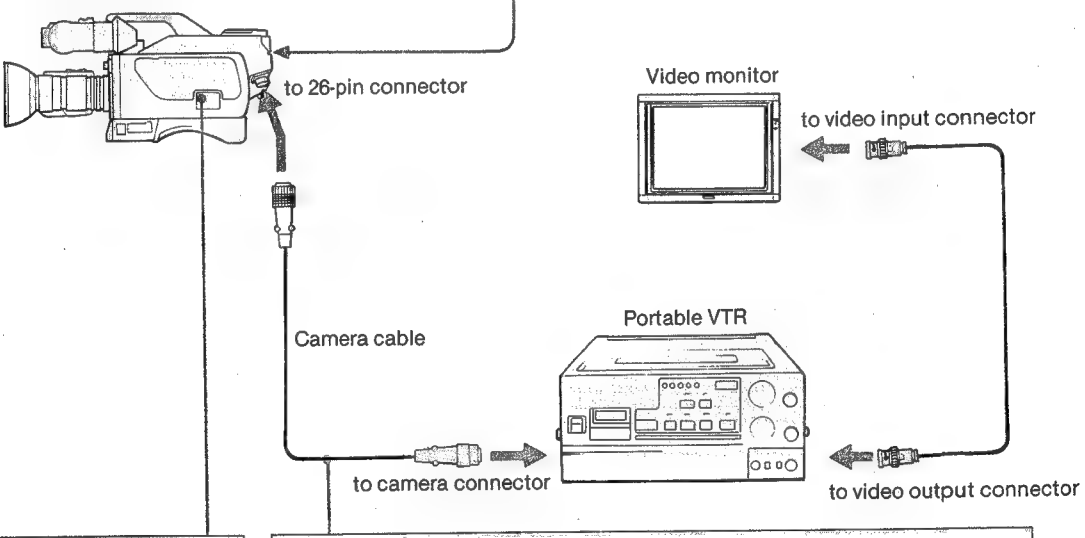
To use the VTR other than those mentioned on the left, consult your authorized Sony dealer.

Power sources of the camera	
BVU-150/150P VO-6800/ 6800PS VO-8800/ 8800P BVW-35/35P	Supplied from the VTR
NV-100 AG-6400	The camera must be powered independently.

MIC LEVEL selector	
BVU-150/150P	–60 dB
VO-6800/ 6800PS VO-8800/ 8800P BVW-35/35P	Set to the same position as the setting on the VTR.
NV-100 AG-6400	–20 dB

Note

When a VTR cannot supply the power to the camera, or the operating time is to be elongated, the camera must be powered independently. If the power is not supplied independently, a protection circuit in the VTR or the AC power adaptor may be activated, and the VTR may not operate.



VTR selector	
BVU-150/150P VO-6800/ 6800PS VO-8800/ 8800P BVW-35/35P	1
NV-100 AG-6400	2

Camera Cable	
BVU-150/150P VO-6800/ 6800PS VO-8800/ 8800P	CCZQ-A The camera cable can be extended up to 10 m (33 feet).
BVW-35/35P	CCZ-A The camera cable can be extended up to 10 m (33 feet).
NV-100 AG-6400	CCZJ The camera cable can be extended up to 5 m (17 feet).

Output signal of the 26-pin connector

If the VTR selector is set to the 1 or 2 position, two kinds of video signals, composite video and component video for "Betacam" format VTR (Y/R-Y/B-Y), are supplied from the 26-pin connector.

To supply the RGB signals

By setting a switch in the camera, the RGB signals or the Y/C signals can be supplied instead of the Y/R-Y/B-Y component signals. For details, consult your authorized Sony dealer.

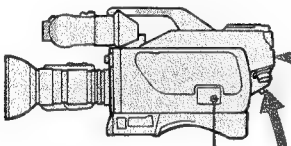
Connecting to a Portable VTR with Y/C Separate Input

VTRs to be connected:
Sony VO-8800/8800P
Panasonic AG-7400

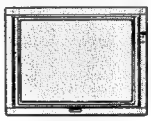
To use the VTR other than those mentioned on the left, consult your authorized Sony dealer.

Power source of the camera	
AG-7400 VO-8800/ 8800P	The camera must be powered independently.

MIC LEVEL selector	
AG-7400	−20 dB
VO-8800/ 8800P	Set to the same position as the setting on the VTR.



Video monitor equipped with an S connector

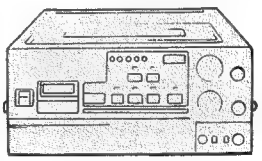


to S video input connector

to 26-pin connector

VTR selector	
AG-7400 VO-8800/ 8800P	3

Portable VTR with Y/C separate input



to camera connector

to S video output connector

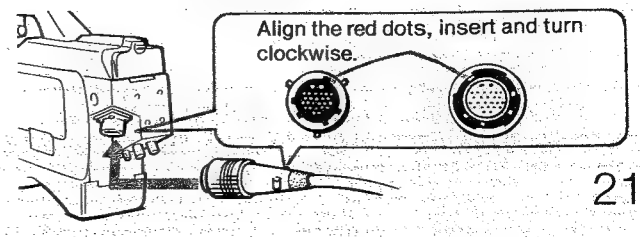
Camera cable	
AG-7400 VO-8800/ 8800P	CCZQ-A The cable can be extended up to 10 m (33 feet).

• When the VTR selector is set to the 3 position, the video signal output from the 26-pin connector is a Y/C signal.

Before making connections

Make sure that the power switches of the camera and other equipment are turned off.
If a large size viewfinder such as a DXF-50/50CE is connected with the POWER (ON/VF PREHEAT) switch on the camera set to the ON position, the camera may not operate normally.

Connecting to the 26-pin connector



Operating Conditions and Functions of the Connected VTR

According to the VTR to be connected, the following functions are available.

Connected VTR	Remote control of VTR start/stop (from the camera or the lens)	Audio monitor (on the camera)	REC indicator		Viewfinder		
			REC indication	VTR alarm	BATT indicator	Picture shown on the viewfinder	
						During recording (picture picked up by the camera)	During playback (picture from the VTR)
BVU-150/ 150P	YES	YES	YES	YES	YES	YES	YES
VO-6800/ 6800PS	YES	YES	YES	YES	YES	YES	YES
VO-8800/ 8800P	YES	YES	YES	YES	YES	YES	YES
BVW-35/ 35P	YES	YES	YES	YES	YES	YES	YES
NV-100	YES	NO	YES	NO	NO	YES	YES
AG-6400	YES	NO	YES	NO	NO	YES	YES
AG-7400	YES	YES	YES	NO	NO	YES	YES*

* A picture from a VTR can be seen only when the RET button is pressed.

To start recording

Press the VTR START/RETURN VIDEO or VTR START button of the camera or the VTR button of the lens.

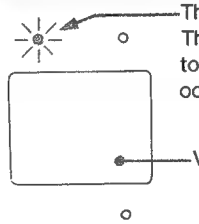
To stop recording

Press the VTR START/RETURN VIDEO button or VTR START button of the camera or the VTR button of the lens again.

Monitoring the sound

Connect an earphone to the EARPHONE jack. The sound being recorded or played back can be monitored.

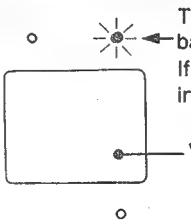
REC indicator (REC/TALLY)



This indicator is lit during recording.
This indicator blinks when the VTR is to start operation or when malfunction occurs on the VTR.

Viewfinder screen

BATT indicator



This indicator blinks to show that the battery should be changed.
If the operation continues, this indicator is lit.

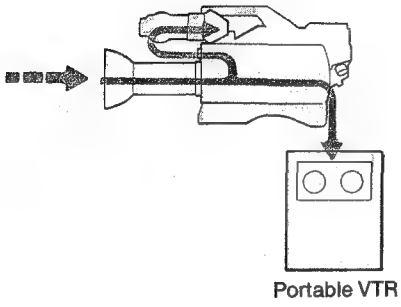
Viewfinder screen.

E-E (Electric-to-Electric) mode

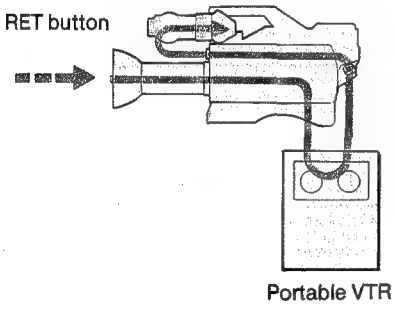
The input video signal to the VTR passes through the amplifier in the VTR and output from the video output connector without passing the video recording head and tape. The input signal to the VTR can be checked in this mode.

Monitoring the picture on a viewfinder screen

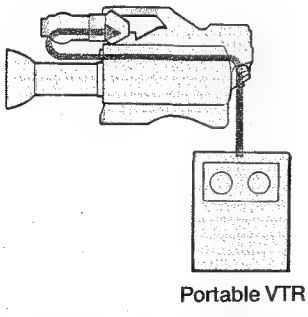
During recording: Picture picked up by the camera



While the RET button of the lens is pressed, the E-E mode picture (return video) from the VTR can be monitored.



During playback: Playback picture from the VTR

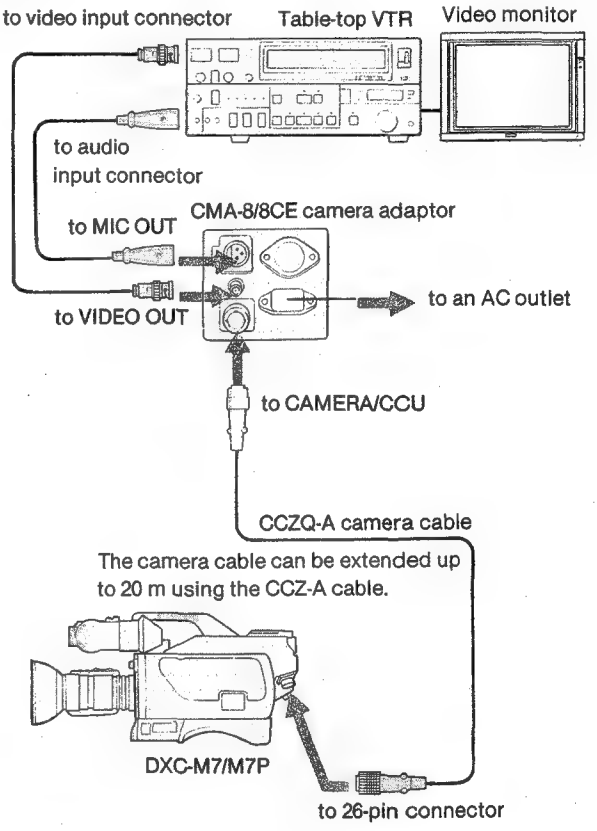


- While the playback picture from the VTR is displayed on the viewfinder screen, the camera's video signal, may be mixed with the playback picture.

Connecting to a Table-top VTR

For example, a Sony VO-9600/9600P is to be connected.

To connect a VTR other than the VO-9600/9600P, consult your authorized Sony dealer.



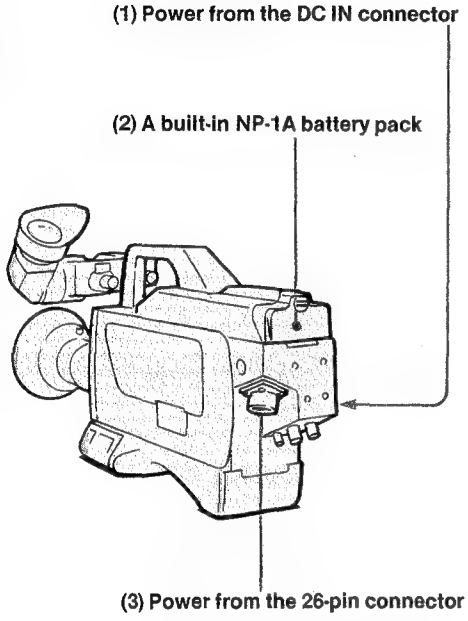
Set the VTR selector to the 1 or 2 position.
Set the MIC LEVEL selector to the appropriate position according to the audio input level of the VTR.

The operating procedure is different from that of a portable VTR as follows:

- The VTR START/RETURN VIDEO and VTR START buttons on the camera, and the VTR button on the lens do not function. Recording must be started and stopped with the function buttons on the VTR.
- The REC/TALLY indicator in the viewfinder does not function.
- The return video and the playback picture cannot be monitored on the viewfinder screen.

Power Sources

The DXC-M7/M7P operates on any of the following three types of power sources.



When two or three of the power sources (1) to (3) are simultaneously connected to the camera, only one of them is used according to numerical order priority. The other power source(s) is (are) automatically cut off.

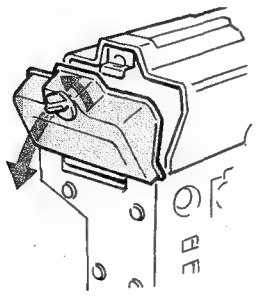
(1) Power from the DC IN Connector

The power is supplied from the DC-8 battery adaptor (optional). Two NP-1A battery packs (optional) can be installed in the DC-8. When two packs are installed, the camera and the DXF-M7/M7CE viewfinder can be continuously operated for about 140 minutes.
For attaching the DC-8 to the camera, see page 18.

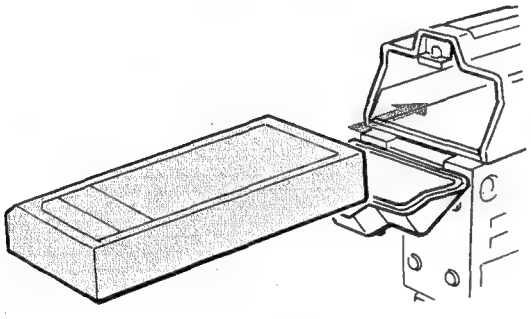
(2) A built-in NP-1A Battery Pack

Install an NP-1A battery pack (optional) in the battery compartment of the camera.

1 Turn the knob fully counterclockwise, and open the lid.



2 Insert the NP-1A, and close the lid.

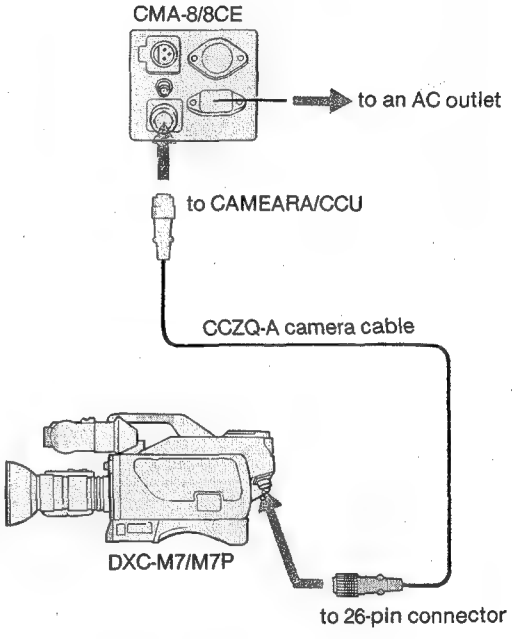


The camera and the DXF-M7/M7CE viewfinder can be continuously operated for about 70 minutes.

(3) Power from the 26-pin Connector

When a VTR, a camera control unit, etc. is connected to the 26-pin connector, the power is supplied from the connected equipment to the camera.
Be sure to check that the VTR can supply the power to the camera in advance. For details, see pages 20 and 21.

Connecting the camera to the CMA-8/8CE camera adaptor



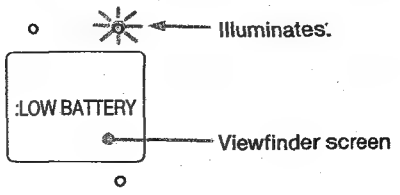
The power is supplied from the CMA-8/8CE to the camera, and the composite video signal and audio signal are supplied from the camera to the CMA-8/8CE.

To connect the camera to the camera control unit, refer to "Studio Use".

Battery charging

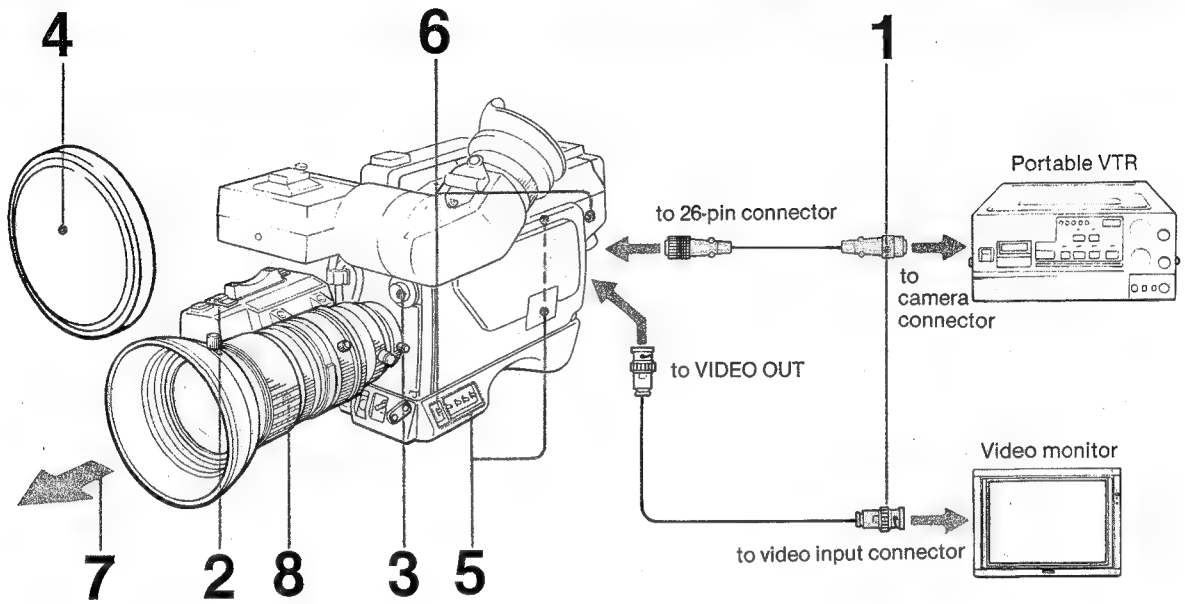
Recharge the NP-1A battery pack before each use, using the BC-1WA battery charger. It takes about 60 minutes at the normal temperature. For details on recharging, refer to the battery charger's instruction manual.

BATT indicator



Basic Operation

It is recommended to be accustomed to the camera operation before actual camera recording.



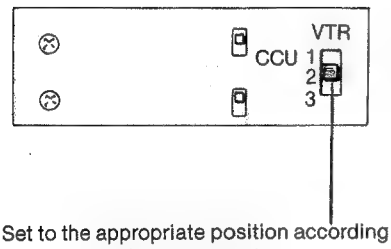
1 Connect a portable VTR and a monitor to the camera.

2 Set the IRIS selector to the A position.

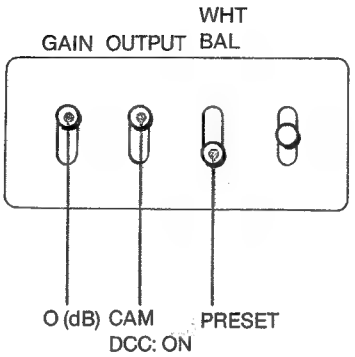
3 Set the FILTER selector to the 1 position.

4 Remove the lens cap.

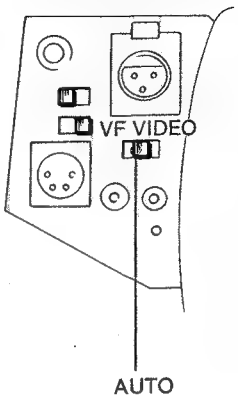
5 Set the switches as follows:



Set to the appropriate position according to the VTR to be connected.
(See pages 20 and 21.)



Side panel at the rear of the camera



When a microphone is used, set the MIC POWER switch and MIC LEVEL selector appropriately. (See page 17.)

6 Turn the power of the connected equipment on.

The camera has two power switches, POWER switch and POWER ON/VF PREHEAT switch.
Be sure to set the both switches to the ON position.
A picture appears on the monitor and viewfinder screen.

7 Point the camera to the object which is more than 1 m apart from the lens.

8 Turn the focus ring to adjust the focus while viewing the picture on the monitor or viewfinder screen.

This is the fundamental procedure for camera operation.
To fully activate the functions and characteristics of the camera, the adjustments mentioned on the following pages are recommended.

Advanced Operation

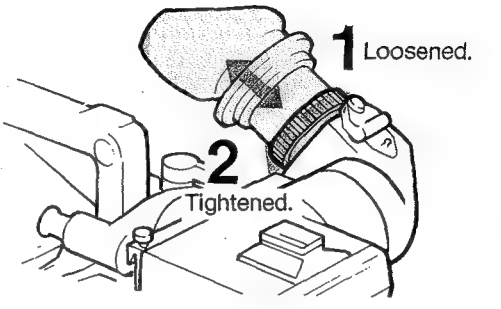
Adjusting a Viewfinder

Diopter adjustment

Since each operator's eyesight varies, it is necessary to adjust the diopter each time the viewfinder is used by a new operator.
Adjust the diopter after focusing as follows.

1 Loosen the diopter adjustment ring.

2 Slide this part back and forth so that the image can be monitored clearly.
Tighten the ring.



Adjusting the contrast and brightness of the viewfinder

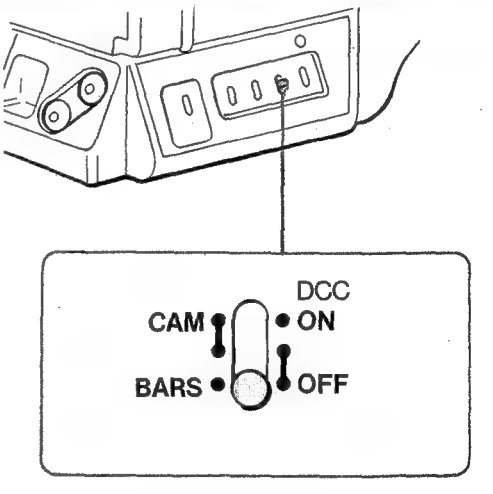
Using the color bar signals generated by the DXC-M7/M7P, the contrast and brightness can be adjusted.

1 Set the OUTPUT selector to the BARS position.

2 Adjust the contrast and brightness with the CONTR and BRIGHT controls, referring to the color bar signal on the viewfinder screen.

The CONTR and BRIGHT controls do not affect the output signals of the camera.

3 Set the OUTPUT selector to the CAM position after adjustment.



Note on diopter adjustment

The adjustable range of the diopter is from −1D to −3D.

Note

When the OUTPUT selector is set to the BARS position, the iris automatically closes. If the IRIS selector is set to the M position, the iris does not open even if the OUTPUT selector is returned to the CAM position. It is necessary to open the iris manually.

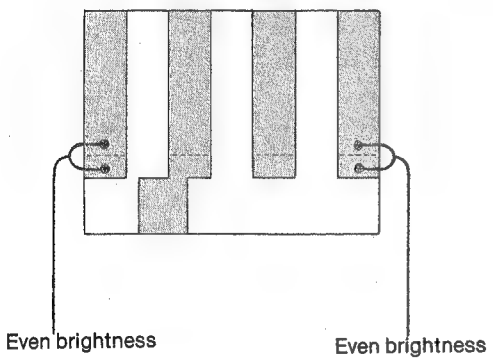
Adjusting a Video Monitor (for the DXC-M7 only)

Using the SMPTE color bar signal generated by the DXC-M7, the monitor can be adjusted.

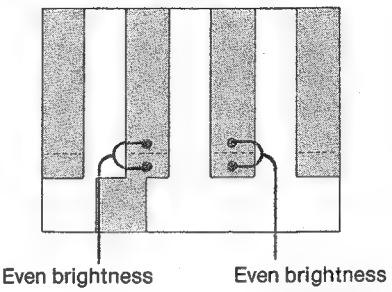
1 Set the OUTPUT selector on the camera to the BARS position.

2 Set the monitor to monocolor mode of blue (B).

3 Turn the chroma control on the monitor until the following conditions are obtained.



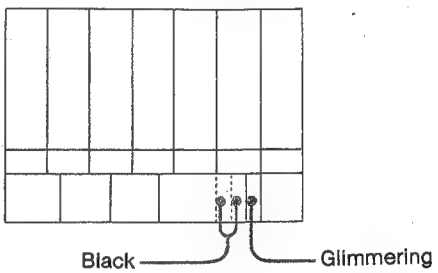
4 Turn the phase control on the monitor until the following conditions are obtained.



Repeat steps 3 and 4 until the brightness of 4 blue parts will be even.

5 Set the monitor to the normal (tricolor) mode.

6 Turn the brightness control on the monitor until the following conditions are obtained.



(Adjustment in step 6 is required every time the brightness around the monitor or the distance between the operator and the monitor is changed.)

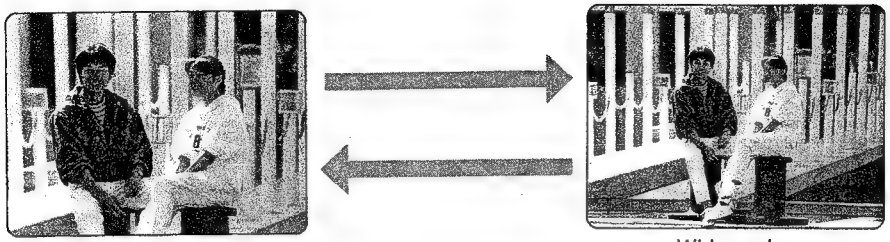
7 Set the OUTPUT selector on the camera to the CAM position.

Note

When the OUTPUT selector is set to the BARS position, the iris automatically closes. If the IRIS selector is set to the M position, the iris does not open even if the OUTPUT selector is returned to the CAM position. It is necessary to open the iris manually.

Zooming

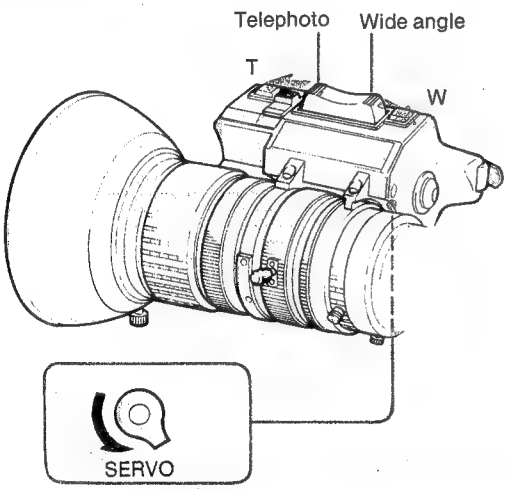
A picture angle can be changed consecutively.



Telephoto　　Wide angle

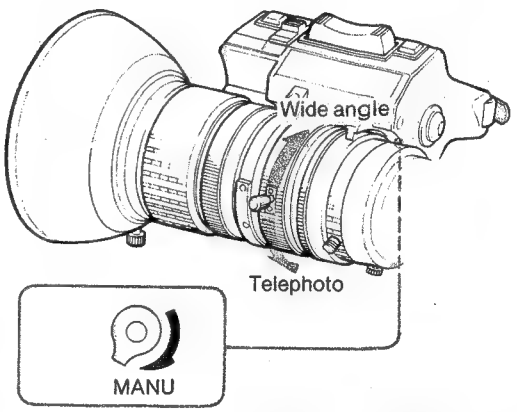
Motorized zoom

Set the ZOOM selector to the SERVO position, and press the zoom switch. Then you can zoom smoothly. Zooming is faster when the switch is pressed down all the way and becomes slower when it is pressed down only slightly.



Manual zooming

Set the ZOOM selector to the MANU position for manual zooming. Manual zooming allows more precise control of the zooming speed.



Tips on zooming

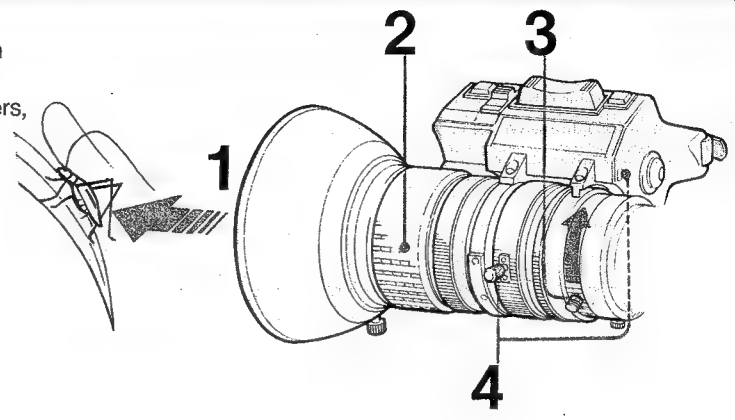
Correct focusing
If the focus is right in the telephoto position, it will be right when you zoom out to wide angle.

Positioning the object at the center of the screen
For zoom in operation, adjust the focus in the telephoto position, and set to the wide angle position. Then start zoom in operation. Otherwise the subject may be out of the screen during zooming in.

Following
Zoom up on the object and follow its movement with the camera. This zoom effect is used, for example, to emphasize the speed of the object by making the background rush past in a blur.

Close-ups

To shoot small or nearby objects within 0.95 m from the camera, the close-up or macro function is recommended. This function lets you zoom in flowers, insects and even photographs.



1 Adjust the distance between the lens and the object to get the desired image size.
The minimum distance from the lens to the object is 10 mm in the "9.5" wide-angle zoom position.

2 Set the focus ring to the ∞ position.

3 Pull and turn the MACRO ring lever to the direction indicated by the arrow until it stops.

4 Set the ZOOM selector to the MANU position, and turn the zoom lever to adjust the focus.

The focus can be adjusted on the object at the infinity or at the middle point.

When the close-ups operation is completed, turn the MACRO ring to the opposite direction indicated by the arrow until it stops.

To reduce the object's size on the screen

First adjust the focus following steps 1 through 4 above, then turn the MACRO ring slightly to the opposite direction indicated by the arrow, and adjust the focus with the zoom lever again.

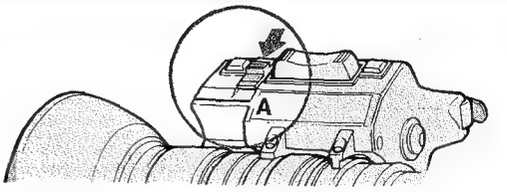
Note

The depth of field is short in the close-ups shooting. Adjust the diopter and focus precisely.

Adjusting the Iris

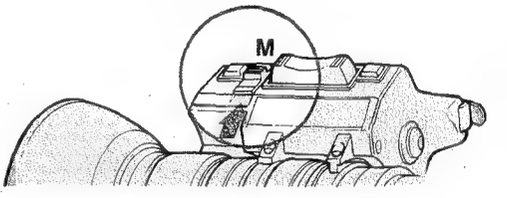
Automatic adjustment

Set the IRIS selector to the A position, and the iris will be automatically adjusted to the brightness of the object. Normally use the A position.



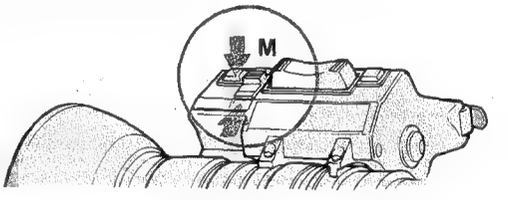
Manual adjustment

Set the IRIS selector to the M position, and turn the iris ring.
Manual adjustment may be effective when shooting an object against a bright sky or scene with high contrast.



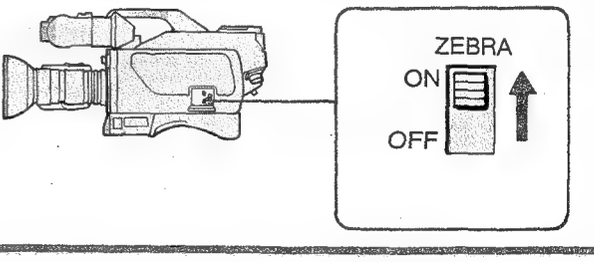
Temporary automatic adjustment

While the momentary automatic iris adjustment button is kept depressed during manual iris adjustment, the iris is automatically adjusted. When the button is released, the iris will be fixed at the value that has just been obtained until the iris is adjusted again manually.



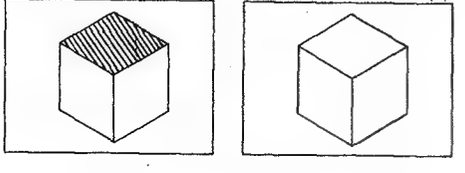
Zebra pattern—Reference for manual iris adjustment

Set the ZEBRA switch to the ON position, and the zebra pattern appears on the part of the viewfinder screen whose video level is about 70 IRE. Adjust the iris so that the zebra pattern appears on the main part of the picture, for example, on the face of a person against a bright background.



Zebra pattern

ZEBRA switch → ON → OFF



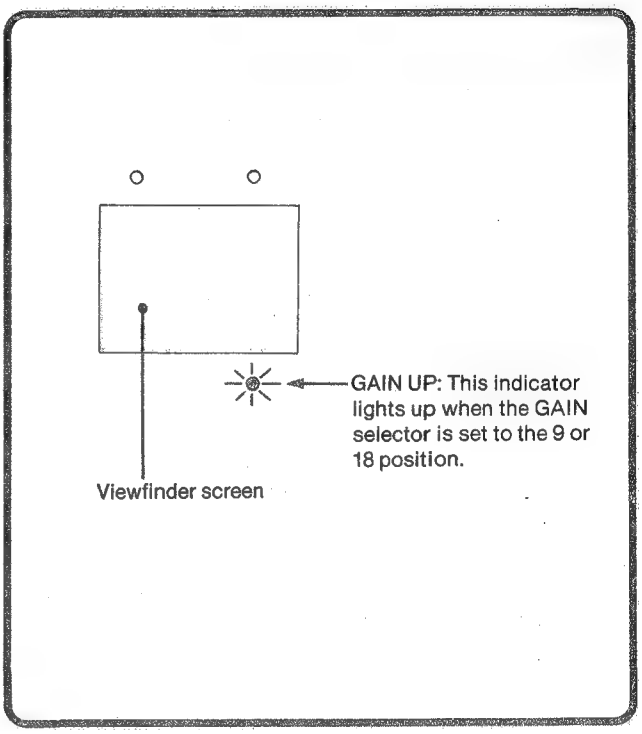
Selecting an Optical Filter

Select an appropriate filter with the FILTER selector in accordance with the lighting conditions to obtain the correct hue.

Filter number	Color temperature and ND	Lighting conditions
1	3200K	Sunrise, sunset, iodine lamp
2	5600K+1/4ND	Bright outdoor
3	5600K	Cloudy, rainy
4	5600K+1/16ND	Clear and brilliant air in a place such as a snowscape, high mountain, seaside, etc.

Selecting the Gain of the Video Circuit

If a clear picture cannot be obtained because of insufficient lighting, set the GAIN selector to the appropriate position. The video gain can be increased by 9 dB by setting the selector to the 9 position, and by 18 dB by setting the selector to the 18 position.
Normally set the GAIN selector to the 0 position.



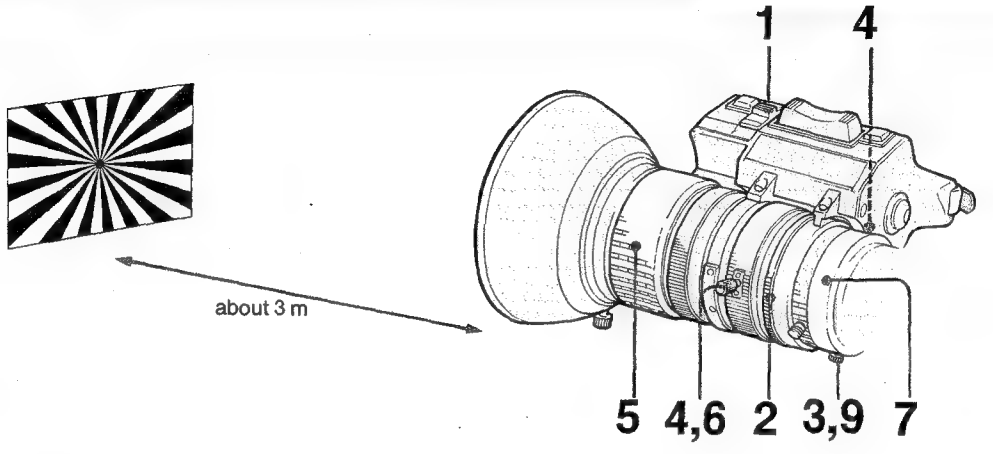
ND (Neutral Density) filter

The ND filter evenly absorbs all wavelength of lights, which reduces the amount of light input to the camera without changing the color.

Adjusting the Flange Focal (Ff) Length

The proper flange focal length adjustment insures that the object is in focus both at the wide-angle position and at the telephoto position when zooming.

The flange focal length adjustment is required only when the lens is changed.



1 Set the IRIS selector to the M position.

2 Open the iris (set the iris ring to the 1.8 position). Place the flange focal length adjustment chart at the position about 3 m apart from the lens, and illuminate it so that the proper video level is obtained with the iris ring set to the 1.8 position.

3 Loosen the Ff adjustment ring lock screw.

4 Set the ZOOM selector to the MANU position, and turn the manual zoom lever to the telephoto position, 143.

5 Point the camera to the flange focal length adjustment chart, and adjust the focus with the focus ring.

6 Turn the manual zoom lever to the wide angle position, 9.5.

7 Turn the Ff adjustment ring to adjust the focus on the chart. Do not move the focus ring.

8 Repeat steps 4 through 7 until the focus is adjusted at both telephoto and wide angle positions.

9 Tighten the Ff adjustment ring lock screw.

Adjusting the Black Balance and Black Set

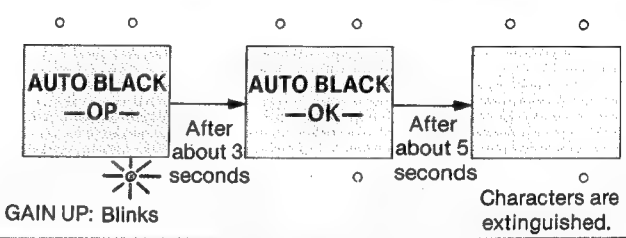
The black balance adjustment is required in order to obtain picture clarity and lifelike color reproduction. The deviation of black level among the R, G and B channels (black set) should also be adjusted.
When the automatic black balance adjustment is executed, the black set is adjusted first, and the black balance is then adjusted.
The adjusted value is kept in the memory of the camera for more than 10 years.

Adjustment

Push the AUTO W/B BAL switch to the BLK position. When the click sound is heard, release the switch. The adjustment starts, and finishes after about three seconds. The adjusted value is automatically stored in the memory.

The black balance and black set adjustments do not depend upon the lighting conditions.

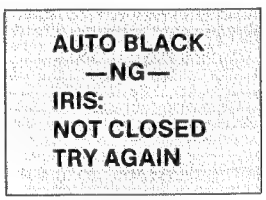
Character display on the viewfinder screen



If the black balance cannot be adjusted

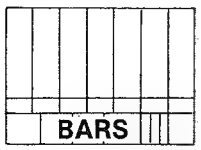
The characters shown on the right are displayed on the viewfinder screen.

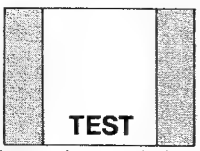
The iris is not closed during adjustment of the black balance. This may occur when the lens connector is not connected correctly, or when some trouble occurs on the lens.



When the video camera outputs the color bar signal or test saw signal

The automatic black balance cannot be adjusted. The following characters are displayed on the viewfinder screen. Set the camera so that the normal video signal is output, and readjust it.





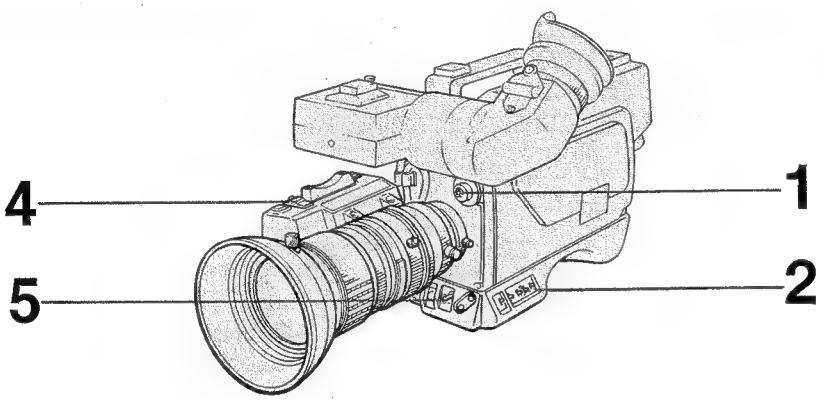
Note

When the black balance is adjusted, the iris automatically closes. If the IRIS selector is set to the M position, the iris does not open even if the black balance adjustment is finished. It is necessary to open the iris manually.

Adjusting the White Balance

The white balance should be adjusted so that the white object is reproduced as white and lifelike color is obtained.

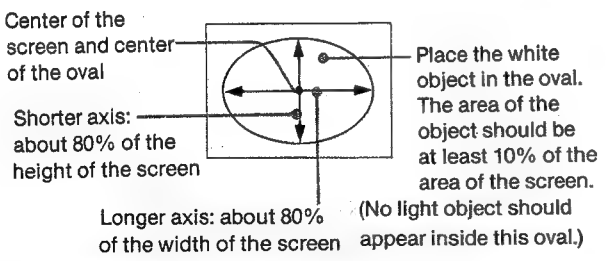
The white balance changes according to the lighting conditions.
Adjust the balance under the same lighting conditions as those to shoot the object.
When the lighting condition is changed, readjustment is required.



1 Select an appropriate filter with the FILTER selector in accordance with the lighting conditions.

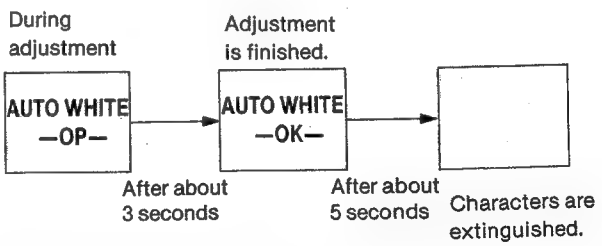
2 Set the WHT BAL switch to the A or B position.

3 Zoom up on a white object such as a white cloth or white paper with the same lighting conditions as those under which the recording will be made.
The minimum white area required for adjustment is as follows.



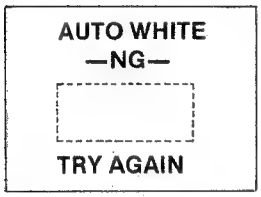
4 Set the IRIS selector of the lens to the A position.

5 Push the AUTO W/B BAL switch to the WHT position. When the click sound is heard, release the switch.
The adjustment starts, and finishes after about three seconds. The adjusted value is automatically stored in the A or B memory (selected by the WHT BAL switch).



If the white balance cannot be adjusted

The following characters are displayed on the viewfinder screen.
Readjust the white balance after the required measures.



Display	Causes and measures
LOW LIGHT	Light is insufficient. Add illumination or raise the video output level with the GAIN selector.
??	The object is not white or very bright light appears in the picture. Change the object to an appropriate one.
C. TEMP. LOW CHG. FILTER	Color temperature is too low. Select an appropriate filter with the FILTER selector.
C. TEMP. HI CHG. FILTER	Color temperature is too high. Select an appropriate filter with the FILTER selector.

Memorizing the white balance value

The DXC-M7/M7P has memories to store the adjusted values of white balance. It has two sets of memories, A and B, and in each memory the values adjusted at each filter position, 1, 2, 3 and 4 are stored. Therefore 8 kinds of values can be stored in total, 4 for A memory and 4 for B memory.

A memory
- Filter 1
- Filter 2
- Filter 3
- Filter 4

B memory
- Filter 1
- Filter 2
- Filter 3
- Filter 4

The stored values are kept for more than 10 years even if the power is off unless otherwise the newly adjusted value is stored.

If you want to start recording without the delay caused by the need to adjust the white balance

Set the FILTER selector to the 1 position for indoor shooting, or to the 2 position for outdoor shooting, and set the WHT BAL switch to the PRESET position. The approximate white balance can be obtained.

If the automatic white balance adjustment cannot be made

In the following four cases, the white balance cannot be adjusted automatically even if the AUTO W/B BAL switch pushed to the WHT position. On the viewfinder screen, the following characters will be displayed.

When the WHT BAL switch is set to the PRESET position	**WHITE: PRESET**
When the CCU is connected, and the manual white balance adjustment is selected on the CCU.	**WHITE: MANUAL**
When the color bar signal is output	**BARS**
When the test saw signal is output	**TEST**

Warning Indications and Character Display

Warning Indications

The following warnings are displayed on the viewfinder screen when the shooting conditions are not satisfied.

LOW LIGHT	**Meaning**	The lighting is insufficient.
	Measures	Increase the lighting. Open the iris. Select an appropriate filter. Set the GAIN selector to the 9 or 18 position.

This indication can be inhibited to appear even under insufficient lighting conditions. For details, see page 40.

C.TEMP.HI or C.TEMP.LOW	**Meaning**	The color temperature is too high (or low).
	Measures	Adjust the white balance again. Select an appropriate filter.

This indication can be inhibited to appear even if the color temperature is inappropriate. For details, see page 40.

LOW BATTERY	**Meaning**	The input voltage to the camera is less than about 11.2 V.
	Measures	Replace the battery with a fully charged one. When you continue recording with a weak battery and the input voltage is less than 11.0 V, the BATT indicator in the viewfinder lights up. The quality of the recording will deteriorate.

Note on color temperature warning indication

Even if the white balance has been correctly adjusted : C. TEMP. HI or LOW may appear when blue or red object is displayed on the whole screen.

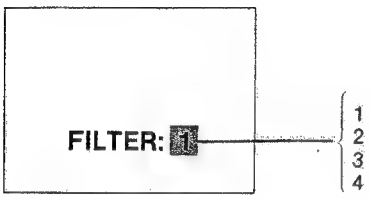
Indication of the shutter speed

When the electric shutter is used, the shutter speed is displayed. When a high-speed shutter is used, the video level will be lowered. Illuminate the object by the lights with sufficient brightness.

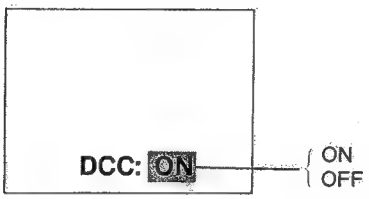
Displaying the Switch Setting

When the setting of switches is changed by the camera or CCU, the following display will appear, and extinguish after about 2 seconds.

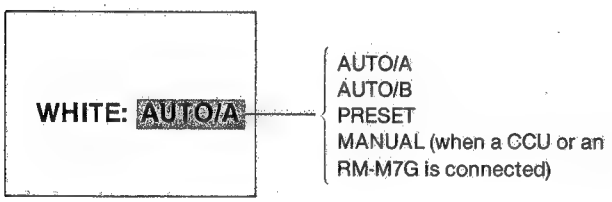
Selected optical filter



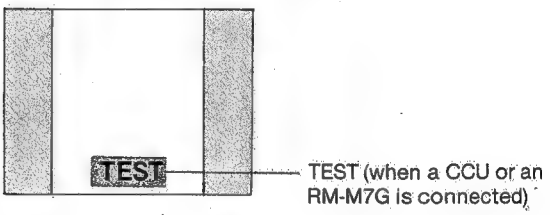
ON/OFF of DCC circuit



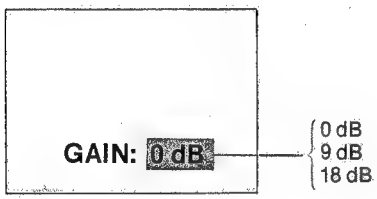
White balance adjustment mode



Output of the test saw signal



Gain of the video circuit



Note on a test saw signal

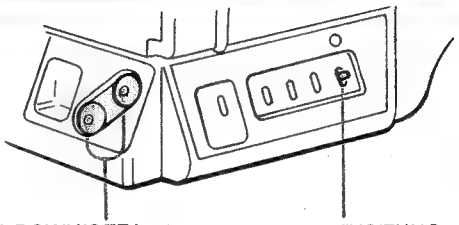
Without connecting a CCU or an RM-M7G, a test saw signal can be output by resetting the switch in the camera, and TEST will be displayed. The switch should be reset by the qualified service personnel. Consult your authorized Sony dealer.

Checking and Changing the Switch Setting

The setting of switches can be checked and changed with the STATUS/FUNC switch.

When pushed to the STATUS position

Normal screen



Push the switch to the STATUS position.

```
FILTER : 1
WHITE : AUTO/A
BLACK : AUTO
GAIN  : 0 dB
DCC   : ON
```

The current switch setting is displayed.

Push the switch to the STATUS position again.

```
INDICATION
L. LIGHT : ON
C. TEMP. : ON
```

Blinks

ON/OFF of LOW LIGHT indication can be selected by the UP/ON or DOWN/OFF button.

Push the switch to the STATUS position again.

```
INDICATION
L. LIGHT : OFF
C. TEMP. : ON
```

Blinks

ON/OFF of C. TEMP. HI (color temperature is high) or C. TEMP. LOW (color temperature is low) indication can be selected by the UP/ON or DOWN/OFF button.

Push the switch to the STATUS position again.

Normal screen

To retrieve the normal screen in operation
Push the STATUS/FUNC switch to the FUNC position.

FILTER The number of the selected optical filter is displayed.

WHITE AUTO/A or AUTO/B: Adjusted white balance value memorized in A or B memory.
PRESET: White balance under 3200K.
MANUAL: White balance value manually adjusted by the CCU-M7/M7P or CCU-M3/M3P.

BLACK AUTO: Automatically adjusted black balance value.
MANUAL: Black balance value manually adjusted by the CCU-M7/M7P or CCU-M3/M3P.

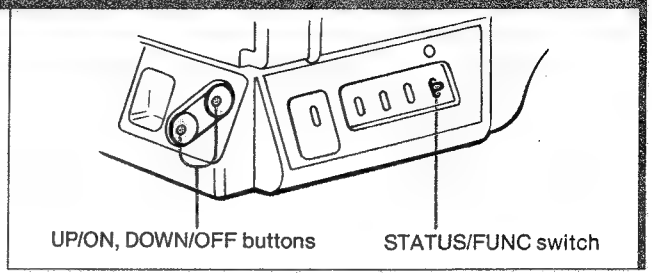
GAIN GAIN selector setting (0 dB, 9 dB or 18 dB)

DCC ON: Knee point is automatically adjusted according to the brightness of the object.
OFF: Fixed knee point.

These indications appear for about 2 seconds when the power of the video camera is turned on. However, if the power of the viewfinder is not turned on in advance, they may not appear.

When pushed to the FUNC position

Normal screen



Push the switch to the FUNC position.

A.IRIS : NORM
KNEE : PRE
M.PED : −29
SHUTTER :
OFF

Blinks

The iris which has been automatically adjusted can be adjusted again by +1, +0.5, −0.5, and −1 with the UP/ON or DOWN/OFF button.
Adjust the iris using this function when an object against a bright background is to be shot.

When a CCU-M7/M7P, RM-M7G, or CCU-M3/M3P is connected
The iris, knee, masterpedestal and shutter speed can be controlled only from the connected equipment, not from the video camera. So the displays shown on the left will not appear.

Push the switch to the FUNC position again.

A.IRIS : −0.5
KNEE : PRE
M.PED : −29
SHUTTER :
OFF

Blinks

Knee point can be adjusted as follows with the UP/ON or DOWN/OFF button.
MIN: For decreasing the knee effects.
PRE: For the factory-preset value.
MAX: For increasing the knee effects.

When the knee effects are increased
Bright part of the picture with high contrast can be reproduced clearly.

When the knee effects are decreased
Bright part is clipped, but the part under the clip level will be reproduced with high fidelity.

Dynamic Contrast Control (DCC) circuit
The DCC circuit detects the peak level of the object and controls the knee point so that the peak level is not over the white clip level. A light intensity level up to 600% can be reproduced.
When the DCC circuit is set to ON, the knee point setting with the UP/ON and DOWN/OFF buttons cannot be executed.
KNEE: AUTO indication will appear.

Level of knee point

Setting of knee	Knee point	Allowable light intensity
MIN	110 IRE	Approx. 300%
PRE	103 IRE	Approx. 450%
MAX	80 IRE	Approx. 600%

Push the switch to the FUNC position again.

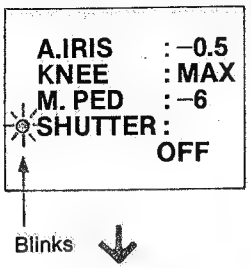
A.IRIS : −0.5
KNEE : MAX
M.PED : −29
SHUTTER :
OFF

Blinks

Master pedestal level can be adjusted with the UP/ON or DOWN/OFF button. The adjustable range is from −31% (MIN is displayed) to +31% (MAX is displayed) against the reference level of 0.7 V.
When shooting outdoors, adjust the master pedestal level so that the picture with desirable contrast is obtained.
When both the UP/ON and DOWN/OFF buttons are pushed simultaneously, the level is set to the reference value, and the indication will be 00.

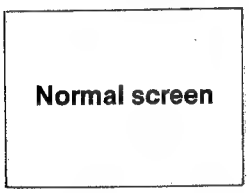
Continued

Push the switch to the FUNC position again.



The speed of the electric shutter can be selected with the UP/ON and DOWN/OFF buttons from among 1/100, 1/250, 1/500, 1/1000 and 1/2000 seconds. OFF indication means that the shutter mode is set to OFF.

Push the switch to the FUNC position again.



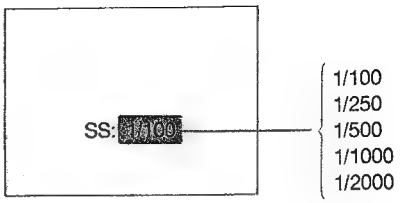
The normal screen will be retrieved.

To retrieve the normal screen in operation

Push the STATUS/FUNC switch to the STATUS position.

Function of the electric shutter

Select the appropriate shutter speed with the method mentioned on the left. When the electric shutter is used, the shutter speed is displayed on the viewfinder screen as shown below.



Note on the electric shutter

If the GAIN selector is set to the 18 (dB) position when the electric shutter is used, a clear picture may not be obtained. Use the electric shutter under the lighting conditions under which a clear picture is obtained with the GAIN selector set to the 0 or 9 (dB) position.

Additional indications

By resetting the switches in the camera, the 9 items shown on the right can be controlled with the UP/ON and DOWN/OFF buttons on the camera after the shutter speed setting. These items are usually controlled by the CCU.
The switch setting should be performed by the qualified service personnel. Consult your authorized Sony dealer.

Adjustable items

R GAIN
B GAIN
R PED (pedestal)
B PED
M GAM (master gamma)
R GAM
B GAM
DTL
KNEE

After the knee setting, push the STATUS/FUNC switch to the FUNC position, and the normal screen will be retrieved.

Memorizing the adjusted values

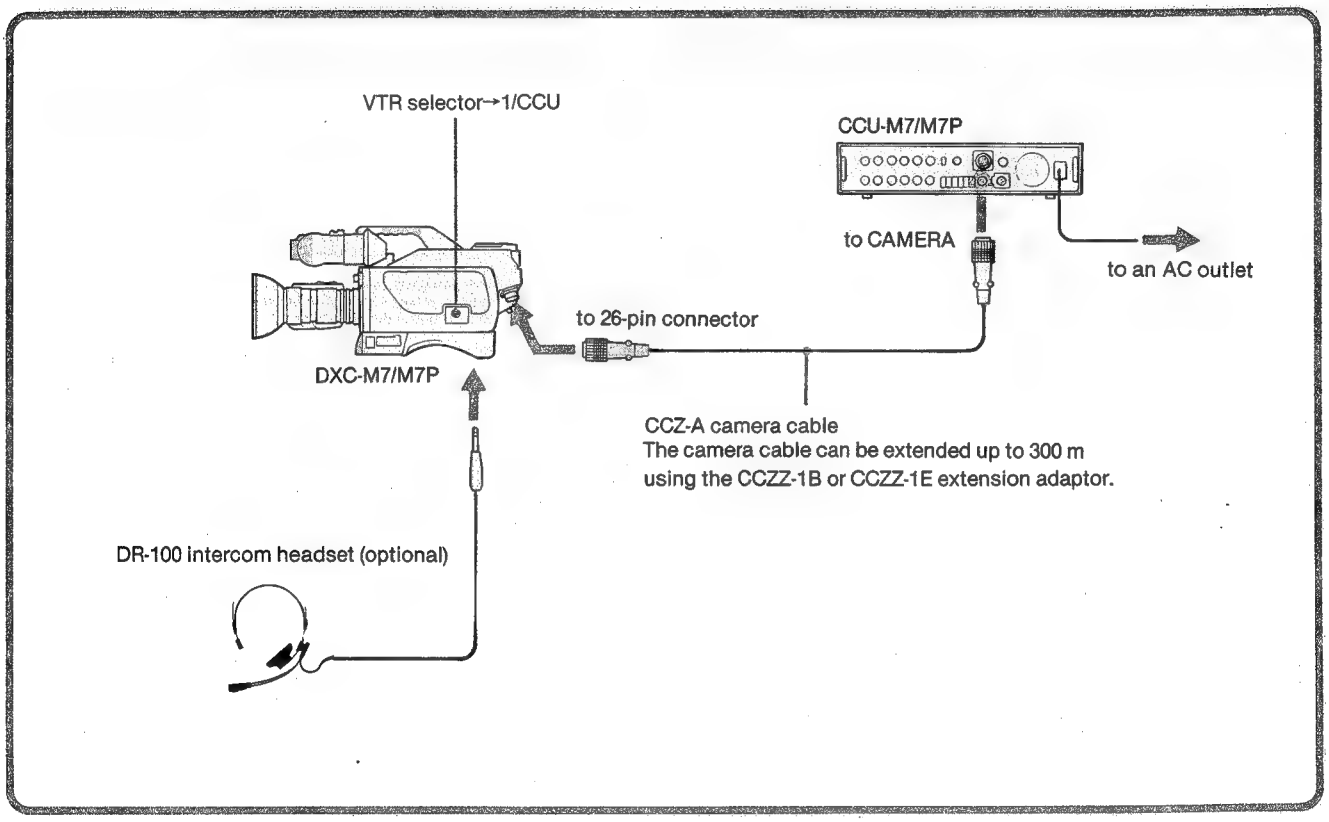
By setting the switches in the camera, the adjusted values including the items in "Additional indications" are automatically stored in the non-volatile memory when the normal screen is retrieved.
The switch setting should be performed by the qualified service personnel. Consult your authorized Sony dealer.

Studio Use

When using two or more cameras simultaneously in a video studio, a special effects generator SEG-2550A/2550AP, etc. is necessary for wiping and switching, and CCU-M7/M7P or CCU-M3/M3P camera control unit for matching all the camera's picture quality and color.

Viewfinders for studio use such as DXF-40/40CE, DXF-50/50CE, are also recommended. For details on the studio system, consult your authorized Sony dealer.

Connecting the Camera to the CCU-M7/M7P Camera Control Unit

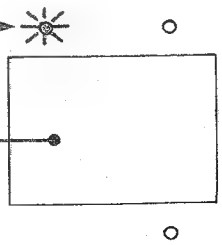


Notes on the connection with the CCU-M7/M7P or CCU-M3/M3P

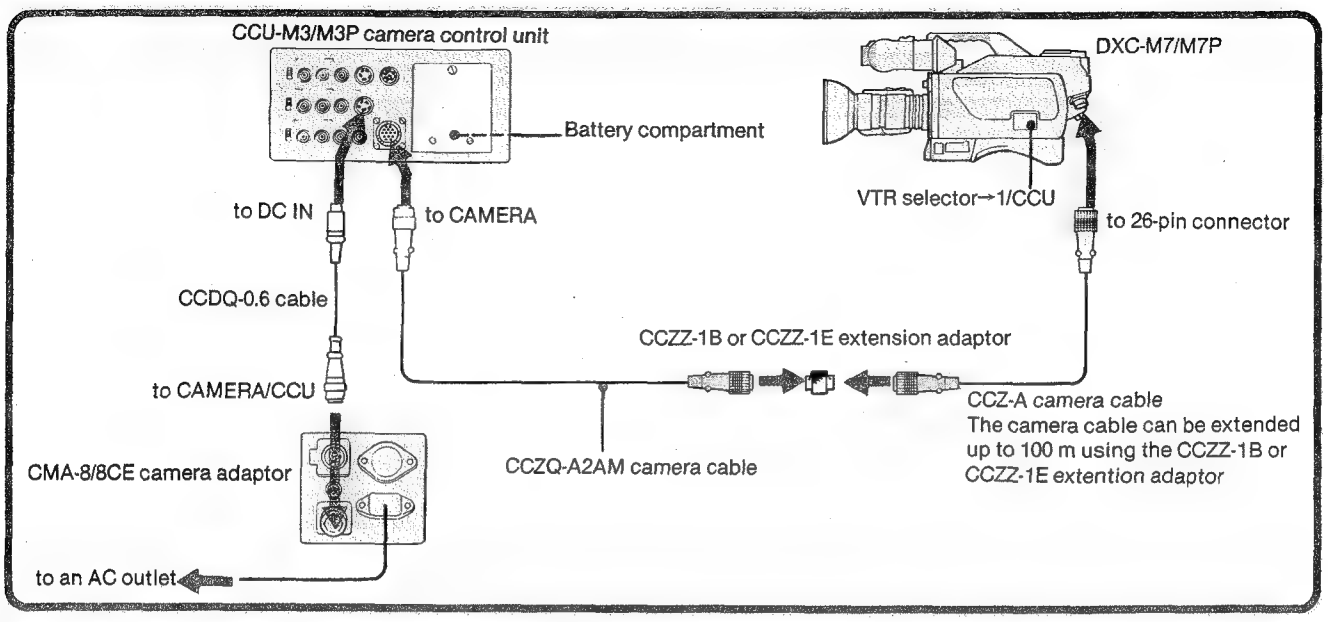
- The GAIN selector, OUTPUT (DCC ON/OFF) selector, SC switch, H PHASE adjustment screw and SC PHASE adjustment screw on the camera will be inoperative.
- The microphone output level will be −20 dB independent of the MIC LEVEL selector setting on the camera.
- The FUNC side of the STATUS/FUNC switch on the camera will be inoperative.
- The white balance can be adjusted on the camera only when the white and black balance adjustment mode is set to the automatic mode on the CCU-M7/M7P or CCU-M3/M3P.
- When the camera is connected to the CCU-M3/M3P, the MIC IN connector of the camera cannot be used because the audio output connector is not equipped on the CCU-M3/M3P. Connect the microphone directly or through a mixing console, etc., to the VTR.

Tally indication

This indicator is lit when a switcher or special effects generator selects the signal picked up by the camera.



Connecting the Camera to the CCU-M3/M3P Camera Control Unit



Storing the Values Adjusted by the CCU in the Memory of the Camera

By resetting the switch in the camera, the value adjusted by the CCU can be stored in the memory of the camera head. (The switch should be reset by the qualified service personnel. Consult your authorized Sony dealer.)

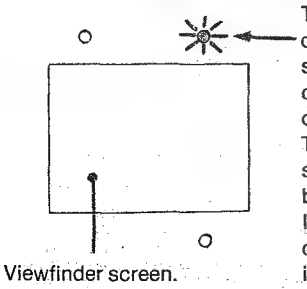
Memorized items

- R GAIN
- B GAIN
- M PED (pedestal)
- R PED
- B PED
- M GAM (Master gamma)
- R GAM
- B GAM
- DTL
- KNEE

Note

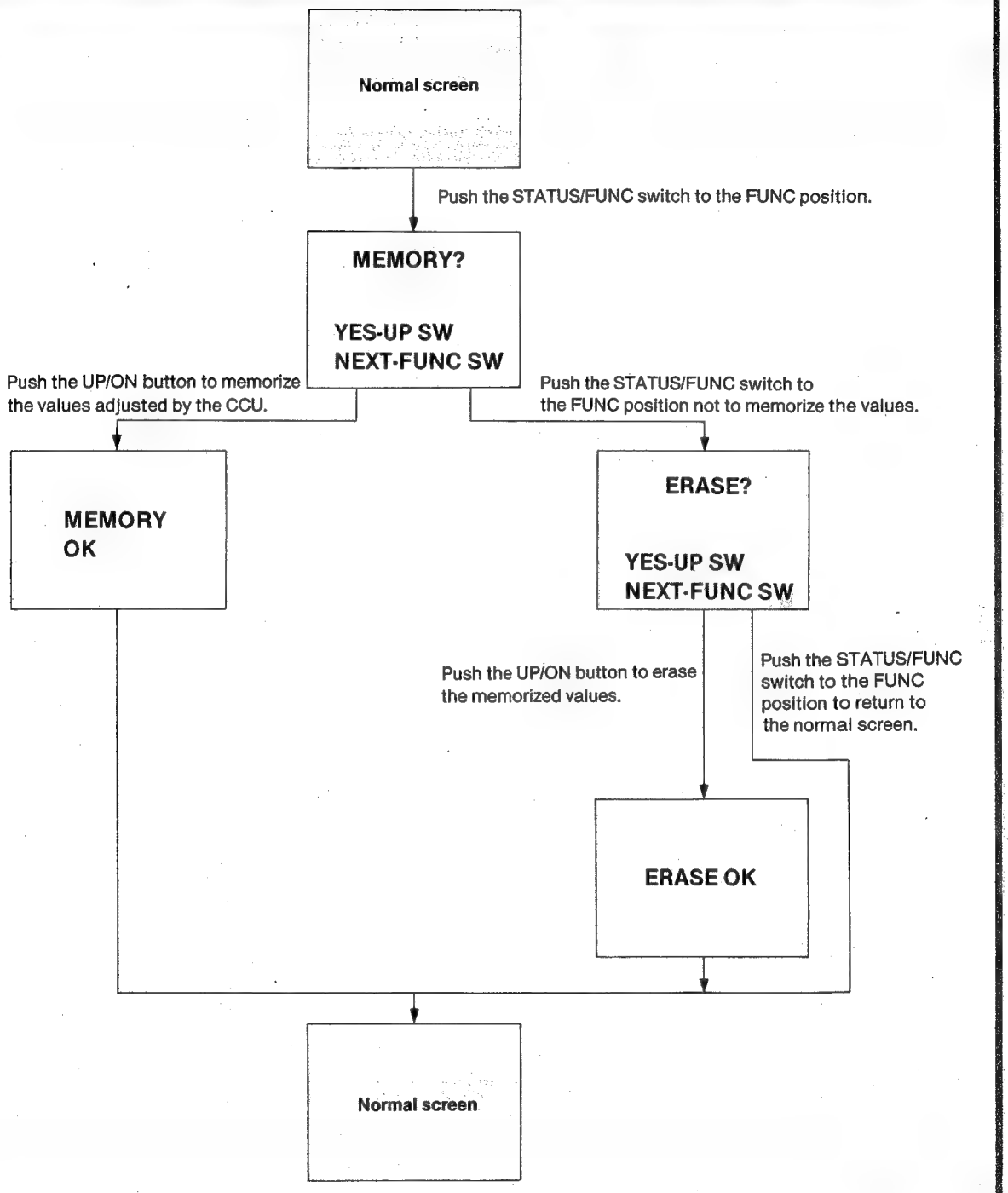
When the knee value adjusted by the CCU is stored with this method, the factory preset knee value is cleared, and the display of "KNEE: PRE" will not appear.

Indication when the CCU-M3/M3P is operated with a battery



The indicator blinks quickly when the switches or controls on the CCU are operated.
The indicator blinks slowly when the battery is discharged.
If the operation continues, the indicator lights up.

Memorizing Procedure

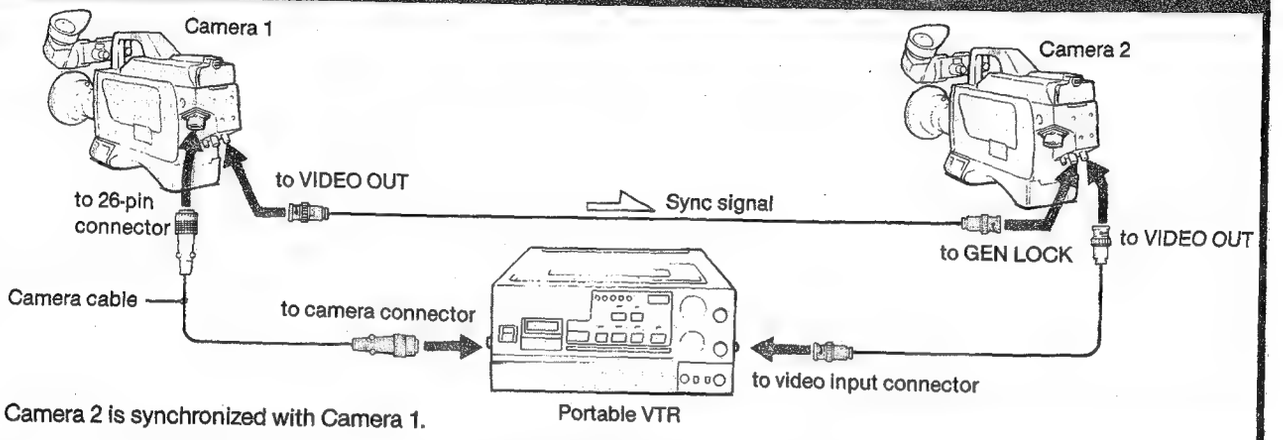


Use of the GEN LOCK Connector

When an external sync signal, composite video or black burst, is supplied to the GEN LOCK connector, the camera is synchronized with the supplied signal.

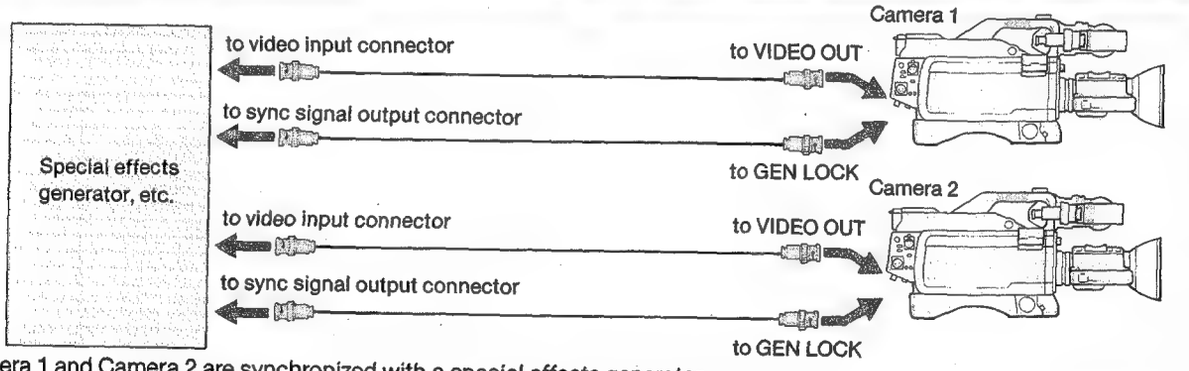
Use this connector when two or more cameras are used without a CCU.

Example 1



Camera 2 is synchronized with Camera 1.

Example 2



Camera 1 and Camera 2 are synchronized with a special effects generator.

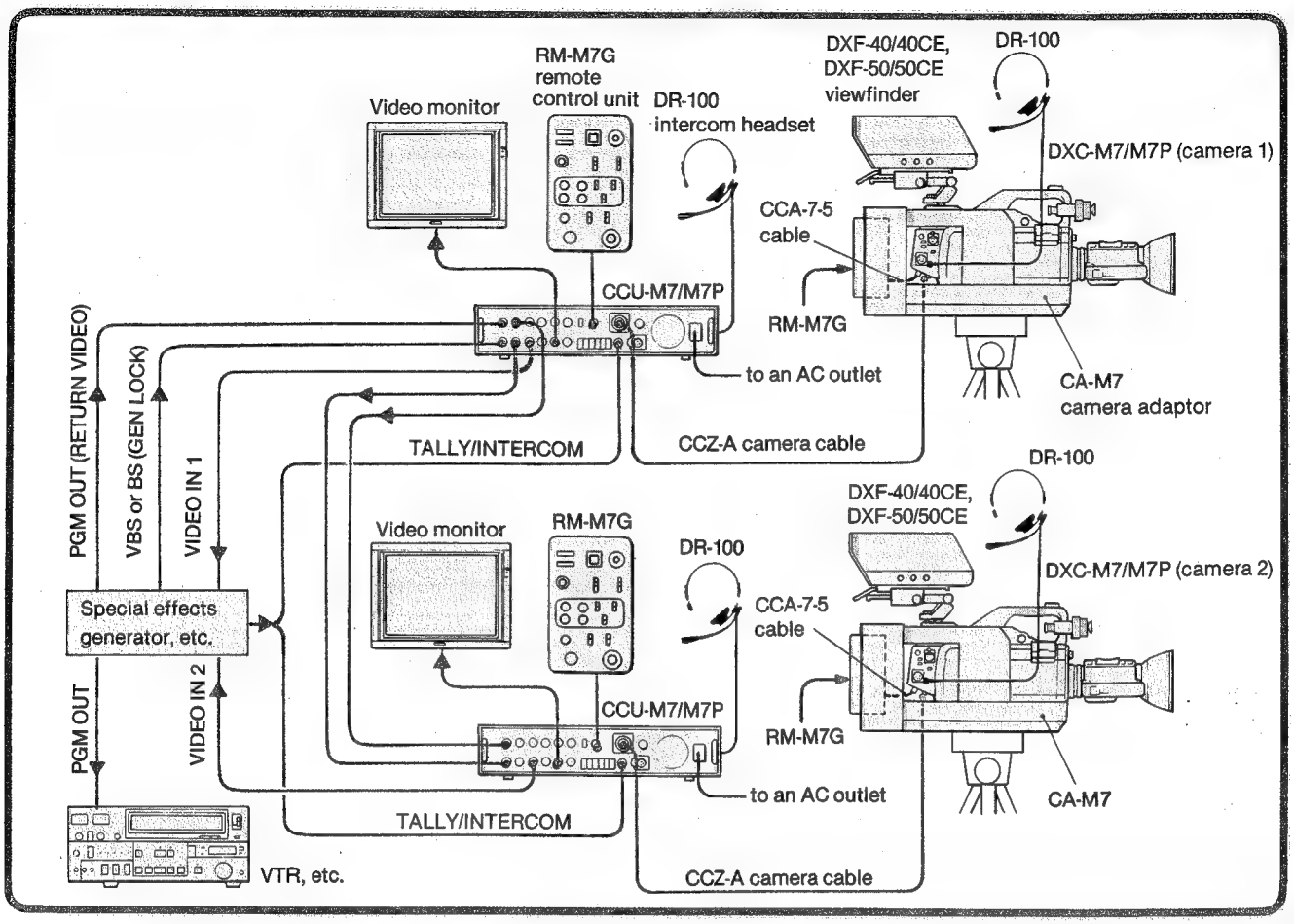
Adjusting the picture tone for two or more cameras—Adjusting the subcarrier phase and horizontal phase

When two or more cameras are used simultaneously in connection with a special effects generator, etc., supply the same reference signal to all cameras, and adjust each camera to obtain the same picture tone with the subcarrier (SC) or horizontal (H) phase adjustment screws.

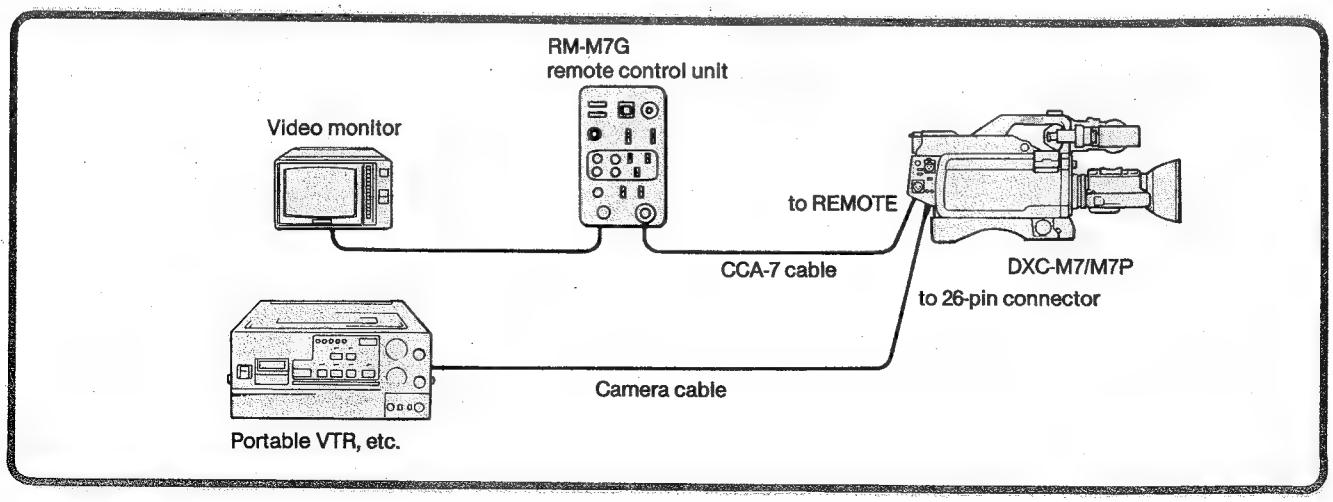
To adjust the SC phase, set the SC phase selector appropriately, then adjust it with the SC PHASE adjustment screw precisely. It is recommended to use a vectorscope for easy adjustment.
To adjust the H phase, turn the H PHASE adjustment screw. It is recommended to use a waveform monitor or an oscilloscope.

Examples of System Connections

Connections for the Studio System



Connections for the Outdoor System



Hints for Better Shooting

Understanding Light and Color

Brightness Levels

The single greatest influence on picture quality is the brightness level. Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

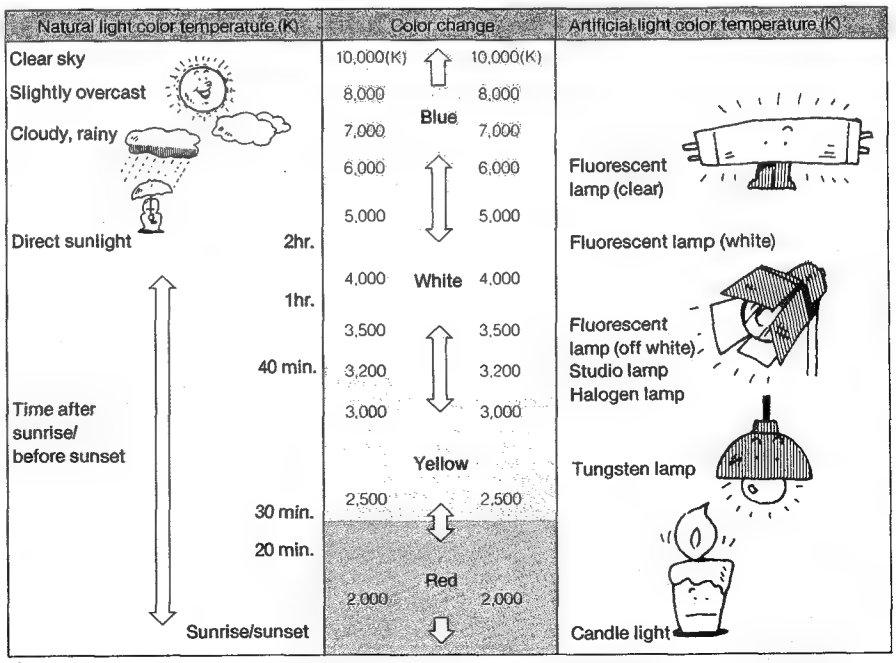
When to use an ND filter
Exceptionally bright scenes such as sunny days at the beach in summer or on snow fields in winter will look "washed out" when recorded. To make these scenes recorded naturally, an ND filter (set the FILTER selector to the 2 or 4 position) is required.

Unit: lux	
	Snow-covered mountains Snow fields Sandy beach, clear day in summer
100,000	Clear day, mid-day (100,000) Clear day, mid-afternoon (35,000) Overcast day, mid-day (32,000)
10,000	
	Overcast day, one hour after sunrise (2,000)
1,000	Office lit by fluorescent lamps, near window (1,000) Clear day, one hour before sunset (1,000)
500	Department store counter (500 ~ 700) Station wicket (650) Office lit by fluorescent lamps (400 ~ 500) Room lit by two 30 W fluorescent lamps (300)
300	Subway station platform (300)
	Arcade at night (150 ~ 200)
100	
	Theater lobby (15 ~ 35) Candle light (10 ~ 15)
10	

Color Temperature—How It Effects White Balance Adjustment

If the temperature of an object continues to increase, it will eventually begin giving off light. At this time, there is a fixed relationship between the object's temperature and its "light color." The temperature of the object radiating the light is expressed in absolute temperature (K).

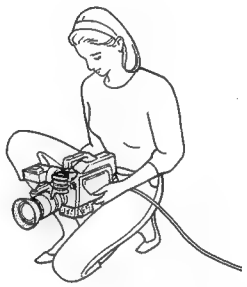
This is also known as the color temperature, which in turn stands for "light color." As color temperature increases, the light color changes from red to yellow to white to blue.



Getting Stable Pictures—Starts with a Correct Stance

For Hand-held Shots, Shooting Position is the Key.

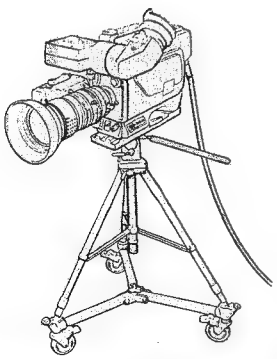
Using three basic positions as a reference, practice shooting positions until you find the stance which provides the easiest shooting and best results.



- When kneeling, placing one knee on the ground provides the best stability.
- Place the eye firmly against the viewfinder eyecup.
- For hand-held shots, put the camera on your shoulder and assume a comfortable, stable position. Make sure the camera does not move.
- Relax your shoulders.
- Put your right elbow firmly against your side to help stabilize the camera.
- If you are going to move the unit while recording, keep both eyes open as much as possible.
- Stand firmly with your feet comfortably apart. Leaning against something firm such as a wall or tree will also provide extra stability.

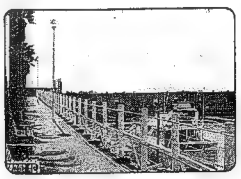
Use a Tripod or Monopod If Possible

Use a sturdy one.
If a tripod is not available, try placing the camera on a tabletop, wall, or any other flat surface of suitable height.



Keeping The Horizontal Plane Level

Even if camera work is smooth and stable, shots can be tilted or off axis horizontally.



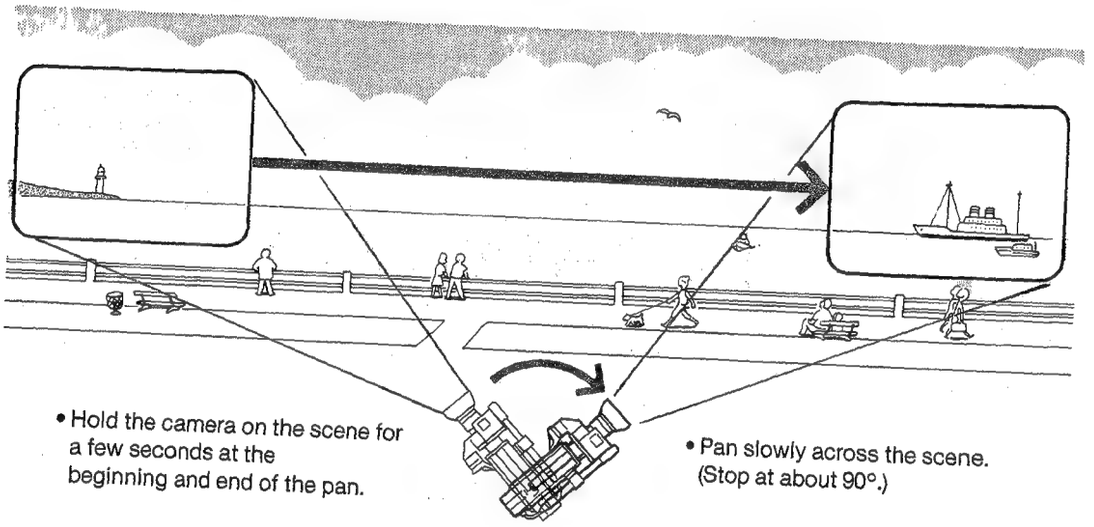
The horizontal plane can be easily determined by using the viewfinder frame as a reference.

Three Frequently Used Shots

These three types of shots will bring additional action and movement to your scenes when properly used. For greatest effect, it is advisable that they not be overused.

Panning —Moving the Camera Horizontally

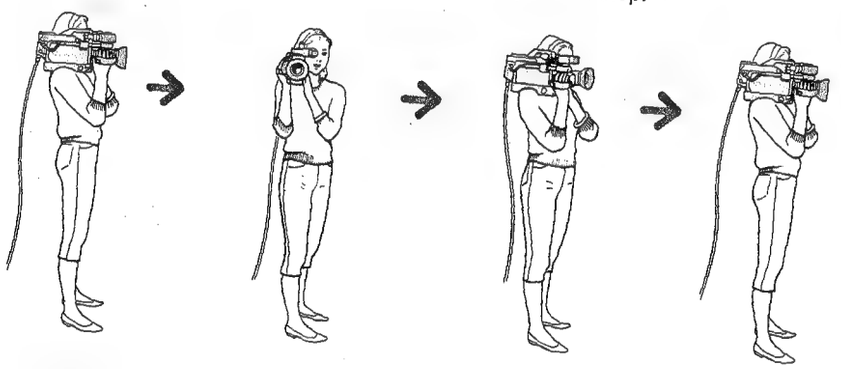
For emphasizing the grandeur of a scene, and for including all of the scenery in a single continuous shot.



- Hold the camera on the scene for a few seconds at the beginning and end of the pan.
- Pan slowly across the scene. (Stop at about 90°.)

For Professional-looking Pans

1 First, stand so that you face in the direction where the pan will end.
2 Without moving your feet, rotate your upper body so that your camera faces the direction where the scene will begin.
3 Start shooting. Rotate your body slowly to the point where the pan will stop.



The best panning speed is one that will allow you to explain the scene during playback.

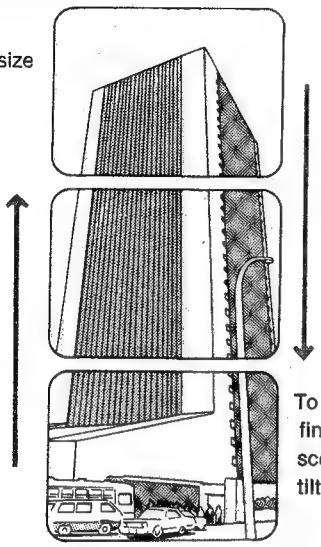
Repeated pans of the same scene should be avoided.

If you can hold your breath during panning and zooming, camera shake can be minimized, and you can concentrate more easily on the scene.

Tilting **—moving the camera vertically**

Tilting shots with the camera should be slightly faster than pans.

To emphasize height... tilt up.

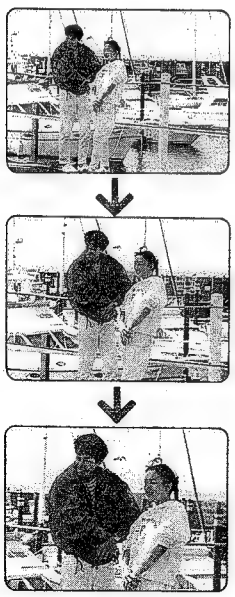


To emphasize the final part of the scene.. tilt down.

Zooming **—changing the size of the subject**

Because telephoto shots make camera shake more noticeable, the camera should be as stable as possible.

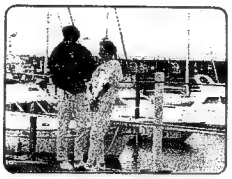
To draw attention to something specific... zoom in.

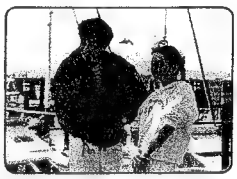


To end the shot by making the circumstances surrounding the scene understood...zoom out.

Sizing the scene-mixing long, medium and close-up shots

Continuous use of long shots or close-ups will give your productions a monotonous "flat" impression. To avoid this, it is important to consider exactly what it is that you wish to "say" with every shot. Indeed, it is possible to change the impression that any subject makes merely by changing the way it's shot.





You don't have to change the subject to alter the scene—you can achieve a different effect by changing the size of the subject itself within the scene.

Framing people

Basic shots for properly framing people are shown below.
Experience has shown that shots that frame people differently than this do not have as pleasant an effect.

Face shot

Even if you cut off the hairline, don't cut off the chin.

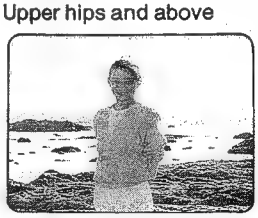
When shooting a profile, leave the space in front of the face to create a "sight line."

Bust shot—

Chest and above

Waist shot—

Upper hips and above



Knee shot—

Knees and above

Full shot—

Entire body

Cutting

Scene Length

—not too long, not too short
While there's no hard-and-fast rule, it is generally advisable to make each scene 6 – 7 seconds in length for easier viewing.
A succession of short scenes can tire the viewer, while long, single scenes can become boring.

Cutting according to the narration
Cut the scene when the narration is finished.

Cutting according to the subject

Close-ups shorter.

Make long shots longer.

Because long shots have more to see in them than close-ups, show them longer so the viewer may understand what's there.

Make interesting shots and shots in which the subject is constantly moving longer.

Make static shots shorter.

Shoot as if you were watching the playback.
That is, it's helpful to occasionally imagine your commentary of the scene even as you're shooting it!

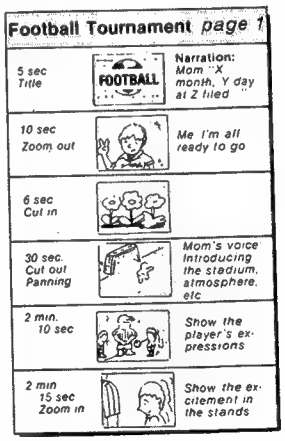
For More Effective Production

In video, organization is the key
To make a first-class production, it is important to decide the contents and shooting sequence in advance. The first step is to sketch out a simple outline of the actual production based on the time-tested "five W's of journalism" (who, what, where, when, why, how). This will allow you to efficiently and effectively record the many exciting events.

Write a script of what you want to record

After the theme has been decided, think about the progression of the scenes and write down the major points of the "story flow" on paper.
This is called a scenario. When writing the script, it is helpful to scout the location where shooting will take place, and, in the event of school activities or weddings, to obtain a copy of the program in advance, if possible. This will allow you to complete actual recording with a minimum of bother.

Typical scenario



Scene progression and narration

Simple outline sketches in a TV frame

- Recording time
- Camerawork
- SE (Sound Effect)—Background music and sound effects

Lighting

For the Sharpest Pictures, You Need the Best Light

For the most brilliant color in your scenes, a sufficient light level must be maintained. If shooting is done indoors or under other circumstances where light is insufficient, lights must be used for best results.

Choosing the right lights

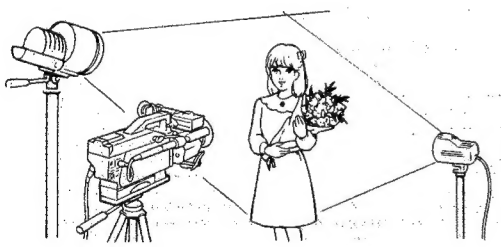
Photography lamps or halogen lamps are recommended.

For lighting of a wide area for easy use – reflector flood light
To emphasize the subject – use a reflector spotlight.

Lighting the subject

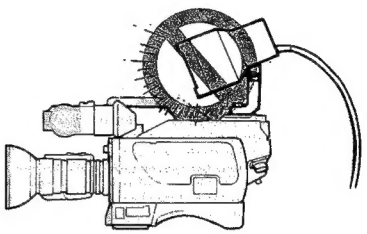
The number of lights and their angle to the subject can make a significant difference in lighting effectiveness.
With a single light:
Locate it above and to one side of the subject. With just one light, contrast is unavoidably enhanced.
To eliminate shadows, another light should be added.
With two lights:
Locate one light above and to one side of the subject, and the second to the side of the subject in such a position that the shadows are eliminated.

If contrast is too strong when lights are used, point a light at the ceiling or reflect it off a sheet of white paper to add soft fill-in light.



Precautions for using lights

- Do not point the light at the camera body. Instead, make sure that it is pointed parallel to the camera or away from it. Be especially careful with lights attached to the accessory shoe.



- Floodlights (lights with wide dispersion) must not be attached to the accessory shoe. Use of a special light stand is recommended.
- Lights become extremely hot during use – do not touch them!
- Do not mix different types of light, as light color temperatures vary and can cause the subject's color to be recorded incorrectly.

For detailed instructions on proper use of lights, carefully read the instruction manuals that accompany them.

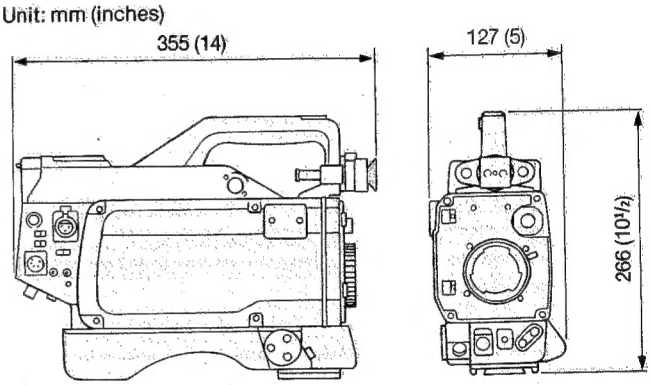
Specifications

Camera (DXC-M7/M7P)

Image device	Interline-transfer CCD, 3-chip
Picture elements	768 × 493 (h/v, DXC-M7) 786 × 581 (h/v, DXC-M7P)
Sensing area	8.8 mm × 6.6 mm (equivalent to a 2/3-inch pickup tube)
Built-in filters	1: 3200 K 2: 5600 K + 1/4 ND 3: 5600 K 4: 5600 K + 1/16 ND
Lens mount	Bayonet mount
Signal system	EIA standards, NTSC color system (DXC-M7) CCIR standards, PAL color system (DXC-M7P)
Scanning system	525 lines, 2:1 interlace, 30 frames/sec. (DXC-M7) 625 lines, 2:1 interlace, 25 frames/sec. (DXC-M7P)
Scanning frequency	Horizontal: 15.734 kHz Vertical: 59.94 Hz (DXC-M7) Horizontal: 15.625 kHz Vertical: 50 Hz (DXC-M7P)
Sync system	Internal External with the composite video or black burst signal supplied to the GEN LOCK input connector or the reference signal input to the 26-pin connector from the GEN LOCK connector of the CCU-M7/M7P or CCU-M3/M3P
Horizontal resolution	700 lines (center)
Minimum illumination	13 lux with F1.8, +18 dB
Sensitivity	2,000 lux with F8.0, at 3200 K
Gain selection	0 dB, 9 dB or 18 dB, selectable
Video output	Composite video: 1.0 V (p-p), sync negative, 75 ohms, unbalanced Y/C separate: Y: 1.0 V (p-p), sync negative, 75 ohms, unbalanced C: Burst level 0.286 V (p-p), 75 ohms, unbalanced Y/R-Y/B-Y component: Y: 1.0 V (p-p), sync negative, 75 ohms, unbalanced R-Y: 0.525 V (p-p), 75 ohms, unbalanced B-Y: 0.525 V (p-p), 75 ohms, unbalanced
Signal to noise ratio	60 dB (DXC-M7) 58 dB (DXC-M7P)
Registration	0.05 % for Zone I 0.05 % for Zone II 0.05 % for Zone III
Inputs/Outputs	26-pin connector: Sony Z-type DC IN: XLR-type, Male, 4-pin MIC IN: XLR-type, Female, 3-pin, balanced GEN LOCK: BNC-type, 75 ohms, unbalanced VIDEO OUT: BNC-type, 75 ohms, unbalanced LENS: 12-pin VF: 8-pin LENS REMOTE: 6-pin REMOTE: 10-pin EARPHONE: minijack INTERCOM: mini intercom jack
Power requirements	12 V DC
Power consumption	16 W (for camera only)
Operating temperature	−10 °C to + 45 °C (14 °F to 113 °F)
Storage temperature	−20 °C to + 60 °C (−4 °F to 140 °F)
Weight	3.6 kg (7 lb 15 oz)

Dimensions

Unit: mm (inches)



Zoom lens (VCL-915BYA)

Focal length	9.5 mm to 143 mm
Zoom	Manual and motorized, selectable Zooming ratio: 15 ×
Maximum aperture ratio	1:1.8
Iris control	Manual and auto, selectable 1.8 to 16 and C (closed)
Range of object field (at the distance of 0.95 meter)	W (wide angle): 601 × 801 mm (23 3/4 × 31 5/8 inches) T (telephoto): 41 × 54 mm (1 5/8 × 2 1/4 inches)
Minimum object distance	0.95 m
Filter thread	82 mm dia.
Mount	Bayonet mount
Weight	Approx. 1.5 kg (3 lb 5 oz) with hood
Dimensions	Approx. 120 mm dia. × 207 mm (4 3/4 × 8 1/4 inches)

Viewfinder (DXF-M7/M7CE)

Picture tube	1.5-inch monochrome
Indicators	REC/TALLY indicator
	BATT indicator
	GAIN UP indicator
Resolution	400 lines
Power requirements	
	12 V DC
Power consumption	
	2.3 W
Weight	Approx. 600 g (1 lb 5 oz)
Dimensions	Approx. 201 × 68 × 184mm (w/h/d)
	($7^{7}/_{8} \times 2^{11}/_{16} \times 7^{1}/_{4}$ inches)

Carrying case (LC-M7G)

Weight	Approx. 5.8 kg (12 lb 13 oz)
Dimensions	Approx. 686 × 440 × 310 mm (w/h/d)
	($27^{1}/_{8} \times 17^{3}/_{8} \times 12^{1}/_{4}$ inches)

Accessories supplied

CCZQ-A2 camera cable
(supplied with the DXC-M7/M7K only) (1)
VCL-915BYA zoom lens (supplied with the DXC-M7K only) (1)
DXF-M7/M7CE electronic viewfinder
(supplied with the DXC-M7/M7P/M7K/M7PK only) (1)
LC-M7G carrying case
(supplied with the DXC-M7/M7P/M7K/M7PK only) (1)
VTC-14 tripod attachment
(supplied with the DXC-M7/M7P/M7K/M7PK only) (1)
Lens cap (1)
Flange focal length adjustment chart (1)
CAC-1 microphone holder
(supplied with the DXC-M7/M7P/M7K/M7PK only) (1)
Spacer for microphone holder
(supplied with the DXC-M7H/M7PH only) (1)
Microphone holder screws
(supplied with the DXC-M7H/M7PH only) (2)
Instruction Manual (1)

Design and specifications are subject to change without notice.

OPTIONAL ACCESSORIES AND RECOMMENDED EQUIPMENT

Camera control unit: CCU-M7/M7P, CCU-M3/M3P
Special effects generator: SEG-2000A/2000AP, SEG-2550A/2550AP
Universal chroma keyer: CRK-2000/2000P
Wipe pattern extender: WEX-2000/2000P
Portable videocassette recorder: VO-6800/6800PS, VO-8800/8800P
Electronic viewfinder (5-inch, B/W): DXF-50/50CE
Electronic viewfinder (4-inch, B/W): DXF-40/40CE
Electronic viewfinder (1.5-inch, B/W): DXF-M7/M7CE
Camera adaptor: CMA-8/8CE
Battery adaptor: DC-8
Battery pack: NP-1A
Battery charger: BC-1WA
Battery shoe: CAC-21
Zoom lens: VCL-915BYA
Lens remote control unit: LO-26
Condenser microphone: ECM-672, C-74
Microphone holder: CAC-1
Microphone cable: EC-0.5C2
Intercom headset: DR-100
Camera cable with Z-type 26-pin and Q-type 14-pin connectors: CCZQ-A2 (2 m), CCZQ-A5 (5 m), CCZQ-A10 (10 m)
Camera cable with Z-type 26-pin connectors: CCZ-A2 (2 m), CCZ-A5 (5 m), CCZ-A10 (10 m), CCZ-A25 (25 m), CCZ-A50 (50 m), CCZ-A100 (100 m)
Camera cable with Z-type 26-pin and J-type 10-pin connectors: CCZJ-2 (2 m), CCZJ-5 (5 m)
Camera cable with Z-type 26-pin and Q-type 14-pin connectors (for CCU-M3/M3P): CCZQ-A2AM (2 m)
CCZ-A cable extension adaptor: CCZZ-1B, CCZZ-1E
Tripod attachment: VCT-14
Rack mounting metal: RMM-1800
Carrying case: LC-M7G
Camera adaptor: CA-M7
Viewfinder attachment metal: CAC-50
Remote control unit: RM-M7G
Camera remote control cable: CCA-7-5 (5 m), CCA-7-20 (20 m), CCA-7-50 (50 m), CCA-7-100 (100 m)

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